An independent magazine published by EMAP
April 1985

95p

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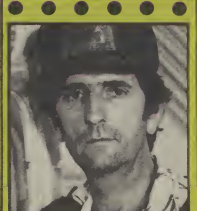

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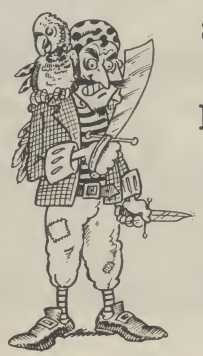
AMONGST the queries which are received in the *Sinclair Programs* office, there are two which appear again and again. Firstly, "What do the underlined letters in your program listings mean?" and, secondly, "Why does this listing tell me to go to a line which does not exist?"

Both have simple answers. Underlined letters in our listings are graphics instructions, and they can always be interpreted by referring to the graphics instructions at the bottom of this page. They are included in the listings because no Spectrum printer prints graphics characters in a way which is instantly comprehensible. We therefore give instructions as to how graphics should be entered, and then underline the instructions to let you know that they should not be entered exactly as they appear.

Many of our listings have instructions to GOTO or GOSUB lines which do not exist. This is not a mistake, and these lines can be entered exactly as they are printed. Sinclair computers will simply go to the next line following the one stated. Such statements occur because lines have been removed while the program was being developed. Any more problems? Let us know, and we will do our best to answer them, either personally, or in the magazine.



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Programs should be on cassette. We cannot undertake to return them unless a stamped, addressed envelope is included. We pay £25 for the copyright of listings published and £10 for the copyright of listings published in the Beginners' section.

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Cover Illustration—Elaine Bishop

Instructions for graphics characters are printed in lower-case letters in our listings. They are enclosed by brackets and separated by colons to distinguish them and the brackets and colons should not be entered.

Inverse characters are represented by the letter "i" and graphics characters by "g". Thus an inverse W would be represented by "iw", a graphics W by "gw", and an inverse graphics W by "igw".

Spaces are represented by "sp" and inverse spaces by "isp". Whenever any character is to be used more than once, the number of times it is to be used is shown before it, together with a multiplication sign. Thus "6★isp" means six inverse spaces and "(g4:4★i4:g3)" would be entered as a graphic four, followed by an inverse four repeated four times, followed by a graphics three.

Where whole words are to be written in inverse letters they appear in the listings as lower-case letters. Letters to be entered in graphics mode on the Spectrum are underlined.

Inverse characters may be entered on the ZX-81 by changing to graphics mode and then typing the appropriate characters and on the Spectrum by changing to inverse video and typing the appropriate letters. Graphics characters may be entered on the ZX-81 by changing to graphics mode and then pressing symbol shift while the appropriate characters are entered. On the Spectrum graphics characters may be obtained by changing to graphics mode and then pressing the appropriate character. User-defined graphics will appear as normal letters until the program has been RUN.

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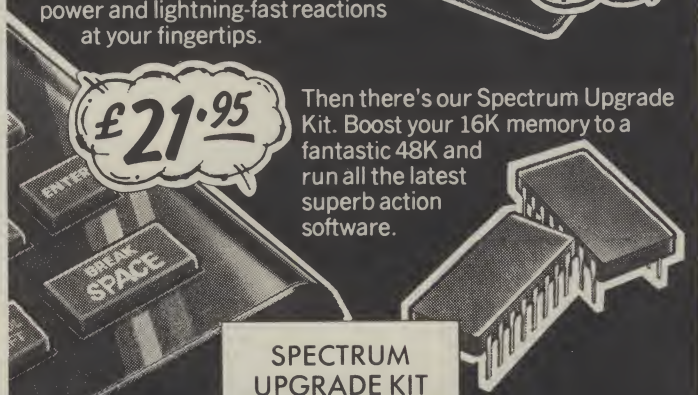

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LETTERS

Send your thoughts to us at Letters, Sinclair Programs, Priory Court, 30–32 Farringdon Lane, London EC1R 3AU. We pay £2 for every letter published.

I AM writing to say that I have finished **Underwurlde** on 6th January, 1985. It took me four hours and twelve minutes to kill all four guardians, collect all the gems and reach level 0. On reaching this level I was greeted by the message: "Congratulations. You have completed Underwurlde. Your next adventure is **Knight Lore.**"

My score was 403,243 and I had 58%. I claim to be the ultimate devil of the Underwurlde.

Johnny Ioannou, North London.

Speech synthesis

CAN anyone help me? I own a ZX-81 and, before Christmas, I bought a speech synthesis module. Having loaded the demonstration tape into the ZX-81 I thought I understood how to use the module, but I was wrong. Can anyone help me to understand how to use it?

L Moxam, Sheffield.

Record breakers

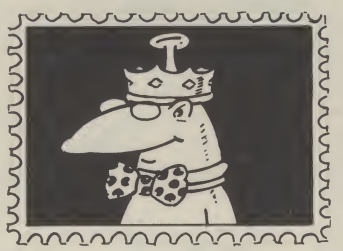
IN REPLY to A Milner's letter, concerning **Daley Thompson's Decathlon,** I have achieved a high score of 228,575 on Day 1, and 504,431 on Day 2.

I have completed the 100 metres in 8.76 seconds, the 400 metres in 29.37 seconds, the 110 metres hurdles in 11.47 seconds and the 1500 metres in 259.7 seconds.

In addition, I have thrown the javelin 121.17 metres, the discuss 75.9 metres and the shot putt 29.03 metres.

My jumping records are 10.46 metres for the long jump, 2.47 metres for the high jump and 5.1 metres for the pole vault.

Richard Harrison, Barnsley, Yorkshire.



AFTER reading Andrew Milner's letter about **Daley Thomson's Decathlon** I set out to beat his high score of 164,265. My high score at that time was 120,322, so it did not have far to go. After sinking into the game I managed, on Day One, a high score of 290,172 and, on Day Two, a high score of 347,625.

I think that this game is the best ever, except Ocean's new release, **Match Day.**

If anyone has beaten my score I should like to hear from them.

Shaun Lowe, Quedgely, Gloucs.

Keyboard upgrade

SINCE reading about the lack of response from ZX-81 owners, in the January issue of *Sinclair Programs,* I felt I had to write to you. I am a ZX-81 owner, and have been one for a year. Although I do not do much programming I have found the flat keys on the ZX-81 very annoying and I resolved to buy a new **Filesixty** keyboard (priced £9.95). It is great!

Printing out programs is now a lot quicker. The keyboard comes complete with a separate overlay and stickers which make games playing a lot easier. It is great value for money.

So, all you annoyed ZX-81 owners, ask for one for your birthday; you will notice the difference. The keys are like Spectrum keys.

R Stephens, aged 12, Colyton, Devon.

Booty is brilliant

I HAVE recently bought **Booty** for my 48K Spectrum. Since I bought it, I have not played any other game, it is brilliant. I have played on it for hours, and find it very addictive.

I have visited most rooms and have managed to find 73 pieces of booty. One thing I cannot do is get key 5 on the first board. I have nearly got it, but the pirate always gets me. I would like to know whether anyone has beaten my score of 73 and can reach key 5.

Mark Simpson, Newcastle-upon-Tyne.

Hi-score rockets

SINCE reading the January issue of *Sinclair Programs* I noticed that the high score on **Rocket Man** stood at 110,570, which was scored by Nicholas Mann.

On looking further, I found that M Pleasance of Brampton had achieved 1,019,796. I would like to add that my high score stands at 2,356,515 but my game crashed when I had 39 men left. Has anybody beaten that?

Mark Heaton, Shipley, Yorkshire.

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I enclose.....Program(s) for the .....computer.

I guarantee that each program submitted is my original work.

Signed .....

Name .....

Address .....

.....

COPYCAT

```
 13 RANDOMIZE : BORDER 0: PAPER
0: INK 7: CLS : INVERSE 0: OVER
0: FLASH 0: BRIGHT 0: GO SUB 90
60
 14 DIM p(4): LET p(1)=11: LET
p(2)=14: LET p(3)=17: LET p(4)=2
0
 15 DIM p$(4,2): LET p$(1)="AB"
: LET p$(2)="CD": LET p$(3)="EF"
: LET p$(4)="GH"
 20 LET n$="1234"
 25 LET e$="0000000000000000000
0000000000": LET c$="55443322
11": LET c$=c$+e$+e$+e$+e$
 30 GO TO 799
 40 FOR f=-20 TO 30 STEP 10: BE
EP .06,f: NEXT f
 50 FOR f=0 TO 50: NEXT f
 100 LET t$=""
 107 INK 4: PLOT 87,63: DRAW -8,
8: DRAW 0,8: DRAW 8,8: DRAW 88,0
: DRAW 8,-8: DRAW 0,-8: DRAW -8,
-8: DRAW -88,0
 110 PLOT 86,87: DRAW -7,-7
 111 PLOT 86,63: DRAW -7,7
 112 PLOT 176,63: DRAW 7,7
 113 PLOT 176,87: DRAW 7,-7
 135 INK 7: PRINT AT 12,10;" AB
CD EF GH"
 140 FOR f=0 TO 30: NEXT f
 150 LET t$=t$+n$( INT ( RND *4+
1))
 180 FOR j=1 TO LEN t$
 185 FOR m=0 TO VAL c$( LEN t$)
*5: NEXT m
 190 PRINT AT 12,p( VAL t$(j));
PAPER 3;p$( VAL t$(j))
 195 BEEP .1, VAL t$(j)*4-8: PRI
NT AT 12,p( VAL t$(j));p$( VAL
t$(j))
 200 NEXT j
 320 FOR y=1 TO LEN t$: LET a$= INKEY$
TO 100- LEN t$: IF a$ >= "1" AND a$ <= "4" THE
N GO TO 350
 330 NEXT x: PRINT AT 16,11; PA
PER 6; INK 0;" TOO LONG! ": BEEP
1,-10: PRINT AT 16,11;"
 "": GO TO 400
 350 IF a$ <> t$(y) THEN PRINT
AT 16,12; PAPER 6; INK 0;" WRON
G ! "; AT 12,p( VAL a$); PAPER 3
; INK 7;p$( VAL a$): BEEP 1,-10:
PRINT AT 12,p( VAL a$);p$( VAL
a$); AT 16,12;"
 "": GO T
O 400
 360 PRINT AT 12,p( VAL a$); PA
PER 3;p$( VAL a$): BEEP .1, VAL
a$*4-8: PRINT AT 12,p( VAL a$);
 363 FOR u=0 TO 20: IF INKEY$ =
"" THEN GO TO 370
 364 NEXT u
 370 NEXT y
 380 GO TO 150
 400 PRINT AT 12,p( VAL t$(y));
PAPER 6; INK 2; FLASH 1;p$( VAL
t$(y)): FOR b=0 TO 13: BEEP .07
,0: NEXT b
 410 PRINT AT 12,p( VAL t$(y))
p$( VAL t$(y))
 700 CLS : PRINT AT 12,12; PAPE
R 2; INK 6;" SCORE:"; LEN t$-1;"
";#0; PAPER 6; INK 0; FLASH 1;"
PRESS A KEY TO CONTINUE.....
": PAUSE 1: PAUSE 0: CLS : FOR f
=-20 TO 30 STEP 10: BEEP .06,f:
NEXT f
 720 CLS
 799 PRINT AT 18,1;"By"; AT 20,
3;"Jeremy Keen"; AT 1,21; INK 6;
" PRESS P "; AT 3,23;" TO PLAY "
 800 FOR f=3 TO 6: INK f: PLOT 6
0,175: DRAW -60,0: DRAW 0,-100:
DRAW 60,0
 805 PLOT 70,145: DRAW -20,0: DR
AW 0,-40: DRAW 20,0: DRAW 0,40
 810 PLOT 80,75: DRAW 0,100: DRA
W 20,0: DRAW 0,-40: DRAW -20,0:
IF INKEY$ ="p" THEN INK 7: CLS
: GO TO 31
 815 PLOT 110,145: DRAW 0,-40: D
RAW 20,0: DRAW 0,40: DRAW 0,-70:
DRAW -10,0: DRAW 0,10
 820 PLOT 190,60: DRAW -60,0: DR
AW 0,-60: DRAW 60,0
 830 PLOT 190,10: DRAW 0,40: DRA
W 20,0: DRAW 0,-40: PLOT 190,20:
DRAW 20,0
 840 PLOT 205,60: DRAW 50,0: PLO
T 230,60: DRAW 0,-60
 845 NEXT f: GO TO 800
 9060 RESTORE : FOR f= USR "a" TO
USR "h"+7: READ a: POKE f,a: N
EXT f: RETURN
 9061 DATA 0,1,3,1,1,7,7,0
 9062 DATA 0,128,128,128,128,224,
224,0
 9063 DATA 0,7,0,7,4,7,7,0
 9064 DATA 0,224,96,224,0,224,224
,0
 9065 DATA 0,7,0,7,7,0,7,0
 9066 DATA 0,224,96,224,224,96,22
4,0
 9067 DATA 0,6,6,6,6,7,0,0
 9068 DATA 0,0,0,0,192,224,192,0
```

Play the part of a Copycat. The computer will build up a sequence of numbers, by adding one number each round. When the computer has finished the sequence, you must repeat it. How many numbers can you memorise before you make a mistake?

Written for the Spectrum by Jeremy Keen of Retford, Nottinghamshire.

All letters to be entered in graphics mode have been underlined.

Softstone
FAHRENHEIT 3000
ODDS: MILLION TO ONE AGAINST
ITEM: WHAT COULDN T HAPPEN HAS
ITEM: THE 'DRAGON' REACTOR
ITEM: CORE TEMPERATURE CRITICAL
MELTDOWN IMMINENT
ITEM: FAHRENHEIT 2990
SHUTDOWN REACTOR
ITEM FAHRENHEIT 2995
MELTDOWN IMMINENT
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NEWS

Soft Aid

SOFTWARE companies are teaming up in a major effort to help the Ethiopian Famine appeal.

Tapes containing several top programs will be issued under the title **Soft Aid**. The tapes will retail at £2.99. The list of programs and contributors is: **Spellbound** — Beyond, **Starbike** — The Edge, **Kokotini Wilf** — Elite, **The Pyramid** — Fantasy, **Horace goes skiing** — Melbourne House/Psion, **Gilligan's Gold** — Ocean, **Ant Attack** — Quicksilva, **3D Tank Duel** — Real Time, **Jack and the Beanstalk** — Thor and **Sorcery** — Virgin.

The project is the brainchild of Rod Cousens, managing director of Quicksilva and it has been endorsed by Bob Geldof.

Soft Aid tapes will be on sale from mid February with all profits going directly to the appeal.

Perilous Appeal

CHEETAHSOFT are also helping to raise money to help Africa.

Profits from all future sales of the game **The Perils of Bear George** are to be donated to the African Appeal Fund and the company hope to be endorsed by The Save The Children Fund.

Although the game centres around the fact that Bear George is likely to starve in the game Howard Jacobson, director of Cheetahsoft does not feel that it warrants too much notice. "The Save The Children Fund are not concerned with this aspect of the game," he said.

They've Won

WINNERS of our January competition will each receive a framed poster of **Tir Na Nog** plus the game itself. The five winners are: Michele-Ann Okolotowicz from London. She is 17 years old and taking her 'A' levels this summer. She owns a ZX-81 but tends to use her boyfriend's ZX Spectrum more often. Nicola Goode, from Bushy is the second female winner this month. Although only 12 years old she learnt to program from her friend's machine and her parents bought her a ZX Spectrum last Christmas.

James Donald from Swansea is 16 years old and, like fellow winner David Ahrens, from Gravesend he is studying for his 'O' levels. Alastair Bain, the fifth prize winner, is a 28 year Architect living in Liverpool. He is attempting to learn all about his Spectrum.

Gone Beyond

MARC PIERSON, member of the Beyond Software team, is also working on a project which is not connected with Beyond. He is writing a program in conjunction with the book publishers, Dorling Kindersley, which should be released in mid April.

Called **The White Feather Cloak,** it will be an educational game with text and graphics. The text is written in rhyming couplets and Marc expects anyone from 14 years and upwards to enjoy playing it. It will sell for around £14.

Sinclair shake out sweeps out Spectrum

SINCLAIR Research have stopped producing the ZX Spectrum in favour of the Spectrum Plus, which has been reduced in price, as has the microdrive cartridge.

Upgrade kits are now available for 48K Spectrum owners. You can send your machine to Sinclair who will convert it to a Spectrum Plus for £30 or buy a kit and do it yourself for £20.

There is no longer a minimum price on the ZX Spectrum, making it possible in some cases to buy one cheaply and upgrade it, thereby making it considerably cheaper than a new Spectrum Plus, which has been reduced from £179.95 to £129.95.

ZX-81 enthusiasts will be pleased to hear that "Sales of the ZX-81 are steady and there is no intention of dropping it from production," according to a spokesman from Sinclair Research.

Microdrive cartridges, have been reduced to £1.99.

No. 1 Wally

FEBRUARY 23rd saw the release of **Everyone's a Wally** from Mikro-gen, who expect it to go to number one in the games and pop charts.

The game is a sequel to the Wally games and has a song recorded on the 'B' side which is also being released as a single record. It is written by John Watkins and sung by Mike Berry of **Are You Being Served** fame. The game's characters include Wally aided by Tom, Dick, Harry and Wilma, and the game revolves around a building site with you controlling all five characters.

Mikro-gen are hoping to make a dent in the pop charts with this new release. The single will sell at the normal price for a record and the game will cost £9.95.

Scientists Play

FOUR SCIENTISTS have devoted the last fourteen months to a new game which is to be released shortly by Firebird Software.

Described by James Leavey, Marketing Manager of Firebird as "a form of inverted rubik cube with arcade action", the game is set in a series of mazes of which there are billions of permutations. Included with the game is a competition to win a Porsche or money to that value.

A name has yet to be agreed, but it is presently known as **Gyron.** Firebird promise that it will be "Exciting and excellent value for money".

Adventure in-waiting

LEVEL 9 have five new adventure games in the final stages of production. Their release dates will be staggered over the whole year.

Emerald Isle, which has suffered some production problems, should now be on sale. It is a graphics adventure set on a tropical island with 150 different locations, and it will cost £6.95.

Three more of the games have been given names, while the fifth has yet to be decided because the name clashed with one already on sale. **Price of Magic** should be available around Easter, **Worms in Paradise** in mid summer and **Red Moon** in early autumn. They are expected to retail at £9.95 and all will have the adventure theme expected of Level 9 games.

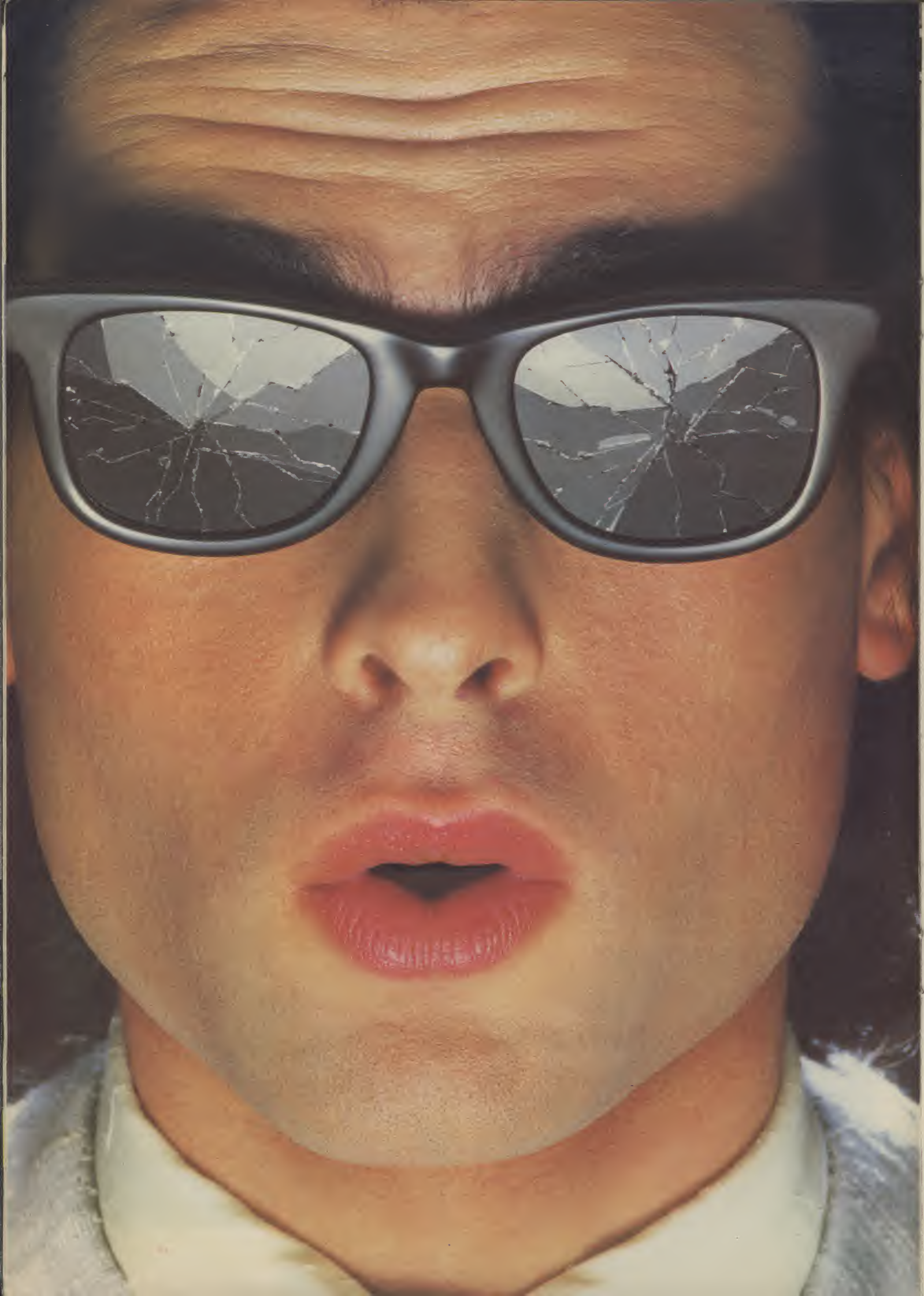
Vulcan has landed

VULCAN Electronics Limited are producing a joystick and interface compatible with both the Spectrum and the Spectrum Plus.

Formerly a distribution company, they have decided to move into the market with some reasonably priced add-ons for the Sinclair machines.

At £8.95 the Gunshot Joystick has suction pads, moulded grip handle, and there is a rapid fire version available at £11.95. The Spectrum Interface is compatible with the Kempston and Gunshot joysticks. It costs £11.50.

Vulcan can be contacted at: 200, Brent Street, Hendon, London, NW4.



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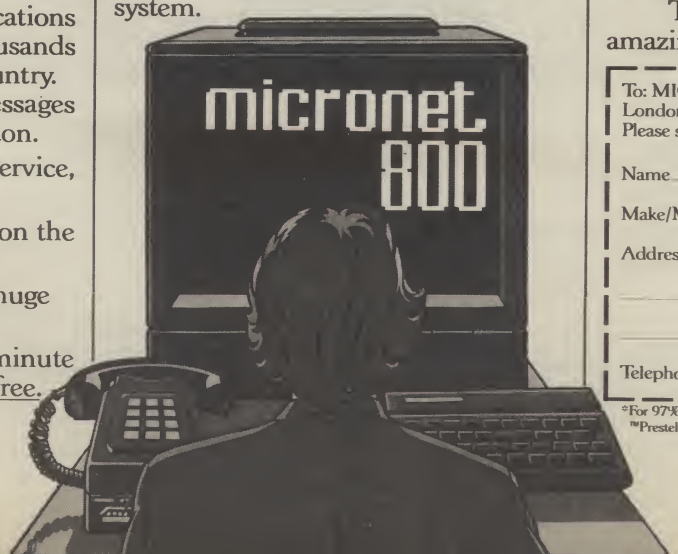

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Sheffield. Laskys, 58 Leopold Street. Tel: 0742 750971.
York. York Computer Centre, 7 Stonegate Arcade. Tel: 0904 641862.

Today was the deadline for my Sinclair Programs problem page, so I had to start asking myself questions about computers. And not sensible questions like, "Why can't I kill more aliens," but basic, boring ones about how computers do what they do. Trouble is, I'm no more interested in these basic questions than I am in why the sky is blue.

"Why is the sky blue?" I wondered.

I was busy driving a tank at the time. Out of the narrow gun-sight I could see a blue strip of sky and a green strip of dirty, churned-up battle-field.

Actually, I decided, I could probably work that one out for myself. All I had to do was change the top half of the screen to paper colour 5, and the bottom half to paper 4.

After the kind of sweat that would normally produce the death of entire galaxies full of many-tentacled monsters, I'd written the following program

```
10 FOR I=1 TO 352: PAPER 5: PRINT"  ";:
NEXT I: FOR I=1 TO 352: PAPER 4: PRINT
"  ";: NEXT I
```

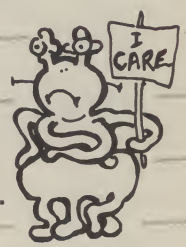
But when I showed it, with modest pride to my sister Eustacia — she laughed!

"Don't send that off to the magazine," she said. "I'd hate them to take the problem page away from us."

"Us!" I thought. Doesn't she realise that, whatever trifling help she's given me from time to time, the authorship of the column was mine alone. We wouldn't even have the job if I hadn't lied so well about my computing skills.

I must admit, though, that the earth and sky did take quite a while to appear with my little program. "It's like waiting for the dawn to come up on a foggy day," said Eustacia cruelly.

She also claimed that my routine would paint over any existing graphics, so I'd always have to fuss around making sure that I put aliens and such on last. "Who cares about aliens?" I said.



But she knew I was lying again.

The next thing I knew, a piece of disgusting pink scented paper had appeared under my nose with the following program written on it.

```
10 REM paper colours (top cyan, bottom green)
20 LET S=0: FOR I=64000 TO 64028: READ N: POKE I,N: LET S=S+N: NEXT I
30 READ SUM: IF S<>SUM THEN PRINT "error in data entry — retype line 40":
STOP
40 DATA 22,40,33,255,87,6,12,197,6,32,35,126,230,199,130,119,16,248,
193,16,242,122,254,32,200,22,32,24,232,3162
60 CLEAR 63999: LIST: RANDOMIZE USR 64000: STOP
70 SAVE *"m";1;"paper" CODE 64000,29
```

"The LIST command shows how the existing character set hasn't been affected." said Eustacia.

"Very comforting," I replied.

"And you can save the program to microdrive with GOTO 70."

"What do I want to do that for," I said. "This tank program paints the sky very effectively, thank you."

Sid.

TRAVEL IN TIME

DRIVE-IN

SOME GAMES you can load into your computer and play as soon as they appear on screen, without even glancing at the story on the cassette insert. **Drive-In,** the new release from Fantasy is not like that at all. It is complex. Really complex.

To start with there are lots of different rooms, 189 in all, each complete with two different brands of energy sapping alien. Then you have to find the parts to build a space ship, although you can only carry four things at a time. You must carry them to room 189, which you must, of course, find, and then assemble them in the correct order.

To help you on your way there are garages, swap shops, banks and time machines. Even reading the cassette insert will be no help here, and you are left to work out for yourself which of these machines is which, what they all do, and how you make them do it.

You will need all your wits about you for this game. A map is essential, and making notes on what you have collected is also important. There is a maze so, following adventure techniques, you must enter it carrying enough objects to enable you to map it. You must remember what is going on everywhere, and you must either zap the aliens, or act fairly nippy in order to avoid them.

Clues? Well, just this once. The map is wrap-round vertically, so if you keep moving upwards you will unsuspectingly find yourself at the bottom of the map. Room 189 is down and to the right of the start. You cannot remove anything from a swapshop until you have put something in the bank. Now go and solve the rest yourself.

Totally addictive, with the complexity of all the other arcade games from Fantasy, Drive-in is produced by Fantasy Software, Fauconberg Lodge, 27a St George's Road, Cheltenham, Gloucestershire.

Price: £5.50
Game type: Arcade
Rating: 80%

TOY BIZARRE

IN THE role of Merton the maintenance man, you have been allocated the job, in **Toy Bizarre,** of facing a night in the Gizmoe Automated Toy factory. Naturally, your period on duty coincides with the time at which the toys decide to revolt. To survive the night you must burst the toy dispersing balloons, destroy the toys and avoid Hilda the clockwork doll.

The game is set on a series of platforms set on different levels, and it is possible to jump from one to another. Remaining on the lowest levels leads to a quick death, while climbing to the higher levels as quickly as possible makes the game straightforward to play.

The game is based on an amusing idea, even though it is rather simple to play. Inattention to detail on the part of the programmer makes it a less attractive game than it could easily have been.

Fun, but not very professionally presented, Toy Bizarre is produced by Activision, 15 Harley House, Marlebone Road, Regent Park, London.

Price: £7.99
Rating: 50%

SKI STAR 2000

APPROACH any *Sinclair Programs* reviewer, say "skiing program" in their ear, and watch them get very pale and nervous. After all, guiding a little dot down your screen, avoiding other little dots is a relatively easy program to write, and we see several each week. Rest assured, **Ski Star 2000** is nothing like that. It is nothing like any skiing program that you have ever seen, and it is great fun.

Your view is the view seen by the skier, and you must move down the slalom course, round each one of the flags, and past the final banner as quickly as possible. A three dimensional view is drawn in outline, in a style reminiscent of **Battlezone.** Once you can do this, you can redesign the course to make life more difficult for yourself.

You can, for example, make life really difficult by wearing view-restricting goggles, adding a multitude of flags, and then hemming in the course with high mountains.

This is a difficult game, and a high score fast time will be a great achievement. You can zoom downhill at breakneck speed, but if you hit a flag or lean over too far you will fall, and will have no option but to start again.

This well-planned and enjoyable simulation is produced by Richard Shepherd Software.

Price: £7.95
Rating: 70%

PLUMMET

WHAT IS Orson doing? "What are you doing, Orson?" "Can't stop, must save the mayor from an awful fate." "Eh?" "I said, can't stop, must save . . .," and he is gone, rushing into the distance, trailing a long rope behind him.

He soon returns. "Forgotten something, old chap?" He shakes his head, "Hit by a mutant revolving door," "?" Off he goes again, trailing his rope.

Next time round, "Mutant revolving door again?" "Ghoulish hunch-backed Zombie doorman." Right, fine, not much to say to that, is there?"

Some time later, Orson returns in the search of another rope. As he emerges in the lobby there is a screeching sound, cries for help and then a sickening thud. Orson collapses into a chair. "Just tell me all about it, old son."

Turns out that the Mayor was stuck in a lift which was giving way. Orson, instead of calling the lift maintenance operatives, had decided to secure it by rushing around this doom-laden hotel in search of ropes and then tying them to the lift. Up and down, through three screens he ran, but the slightest mistake sent him back to reception and, with the Mayor's life at stake, the slightest mistake could not be tolerated.

Plummet is produced for the 48K Spectrum by Interceptor Micros, Lindon House, The Green, Tadley, Hampshire.

Price: £5.50
Game type: Arcade
Rating: 40%

WIZARD'S WARRIORS

WIZARD's WARRIORS, from Mastertronic, takes the form of a complex version of **Pacman.** Your task is to survive each one of a series of mazes. In each maze are several of the Wizard's warriors, each of which is out to get you.

Blue warriors are easy to spot, and can be shot whenever you are in direct line with them. When they are killed, white and yellow warriors will appear, and these can only be seen some of the time. To pinpoint their movements at other times you must refer to the radar at the bottom of the screen. This shows the position of the warriors, but not the positions of any walls in the maze. After the white warriors the Wizard's eagle appears, and then the Wizard himself.

Having survived all these perils, you can move on to the next maze, which will contain fewer hiding places.

Maze enthusiasts will love this game, although it will probably prove slightly too easy for experienced maze movers.

Produced for the 48K Spectrum by Mastertronic, 54 George Street, London W1.

Price: £1.99
Rating: 55%

BOOTY

FROM THE time the title screen, showing a pirate galleon in a shimmering ocean appears, it is clear that **Booty** is a game on which a lot of time and care has been spent. As the game progresses it gets better and better with a variety of problems and a multitude of different ways of producing the final solution.

In the role of Jim the cabin boy, your aim is to collect all the booty from the pirate galleon. In your way are many locked doors, for which you must collect the keys, angry pirates waving their swords, randomly appearing rats and parrots and booby trapped booty.

As if this were not enough, each screen or hold is different in layout. All are on several levels, attached by ladders or lifts, but there is a vast variety involved in the arrangement of each element on screen.

Demonstration mode at the beginning of the program shows you the various holds but does not give you any idea of how they are connected. On most screens there are doors leading to three other holds, and it depends where you land on a screen as to how far you will be able to move easily. Some of the screens are very complex in arrangement and to arrive at them through a one way door often proves a mistake.

An excellent game, astonishingly good value for money, Booty is produced for the 48K Spectrum by Firebird, Wellington House, Upper St Martin's Lane, London WC2.

Price: £2.95
Game type: Arcade
Rating: 83%

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MONTY IS INNOCENT

BREATHE it softly in games circles, *Sinclair Programs* was not impressed by Monty Mole. Nevertheless, the charts showed that everyone disagreed with us, and so we were ready to find signs of excellence in the follow up, **Monty is Innocent,** which had gone unnoticed in Monty Mole.

By the beginning of Monty is Innocent, Monty is incarcerated for life in a huge prison for liberating a bucket of coal from a coal mine. His friend, Sam Stoat, following his conscience rather than the letter of the law, has decided to break into the prison and free him.

This is where you come in. As Sam Stoat, you must break into the prison, move through a variety of three-dimensionally presented screens, fend off a series of opponents such as skulls and reporters by shooting them, collect keys and try them in cell doors until you have freed Monty. For some reason, Sam is not struck by the dubious morality of slaughtering hundreds in order to save one mole.

The graphics in this game are its weakest point. They are appalling. Stiff and jerky little characters run around screens which look impressive until anything moves. Then the old attributes problems strikes, and strikes with a vengeance. The resulting mishmash of colours and confusion of colours with background would be funny if it were not so bad.

The idea behind the game is good, but it is badly presented. Doors to other screens are often invisible, and the 3D pictures are confusing. On the whole, the game is not a patch on Monty Mole.

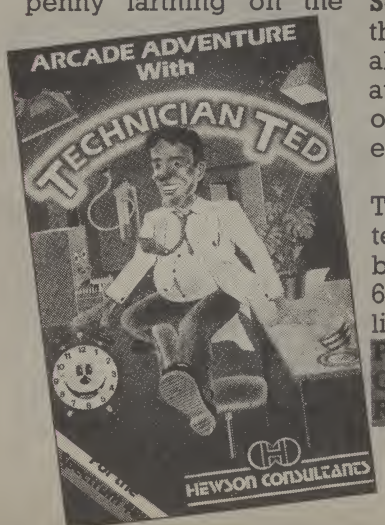
Produced for the 48K Spectrum by Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield.

Price: £6.95
Game type: Arcade
Rating: 40%

TECHNICIAN TED

SOMEWHERE, although exactly where is hard to define, there lies a difference between a game which is enjoyably difficult, and a game which is absurdly difficult. **Technician Ted** falls quite solidly into the latter of these two categories.

There you are, an unexciting animated character, saddled with a load of unexplained jobs, trapped amongst a series of hostile graphics, each of which appears to be drawn to a completely different scale. The first sign of a problem is when, faced with a lethal, rampaging penny farthing on the first screen, your first thought is not: "Oh, yes, good, I am looking forward to finding out what to do and how to do it" but you instead find yourself thinking how exciting it would be to switch the computer off and go to do something completely different.



Ted has to complete his 27 daily tasks by 5.30pm Spectrum time, but his boss has failed to tell him what the tasks are, or where they can be located. Trying to reach your desk in order to find a clue is a major problem in itself, as all the screens look like ineffectual parodies of **Jet Set Willy.** Almost everything you touch is lethal, almost every jump you attempt is either too long or to high for your limited capabilities.

Totally uninspiring, Technician Ted is written for the 48K Spectrum by Hewson Consultants, 60a St Mary's Street, Wallingford, Oxon.

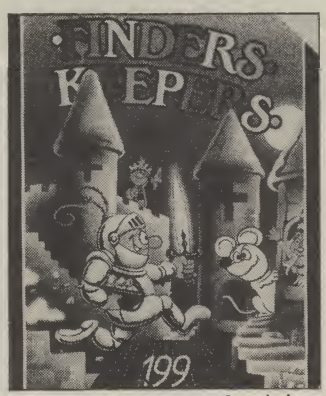
Price: £5.95
Game type: Arcade
Rating: 45%

FINDERS KEEPERS

FINDERS KEEPERS is a charming program in which you play the part of the Magic Knight. You have two choices in the game. Either you can please the king by collecting all the treasure in the castle of Spriteland so that the king can give it to his daughter for her birthday and you can win a place on the Polygon table. On the other hand, you could just keep all the treasure and make your escape.

The castle is made up of an elaborate series of rooms, many of which are based on the time-honoured **Jet Set Willy** principle, with weird creatures which sap your energy crossing and recrossing them, a series of tunnels and ledges and even a teleport which sends you spinning to another section of the castle.

Other sections of the game take the form of mazes, which scroll continually as you move through them, producing an eye-straining effect for anyone playing the game on a television rather than on a monitor.



Only five objects can be carried at any one time. Others can be dropped (except the glue, of course), or sold to the trader. Some objects can be combined with others to produce new ones, although it takes some experimentation to find which objects will combine. For some reason, all objects which you find look like small heaps of salt.

Minor reservations apart, this game is good fun, and represents excellent value for money.

Price: £1.99
Game type: Arcade
Rating: 60%

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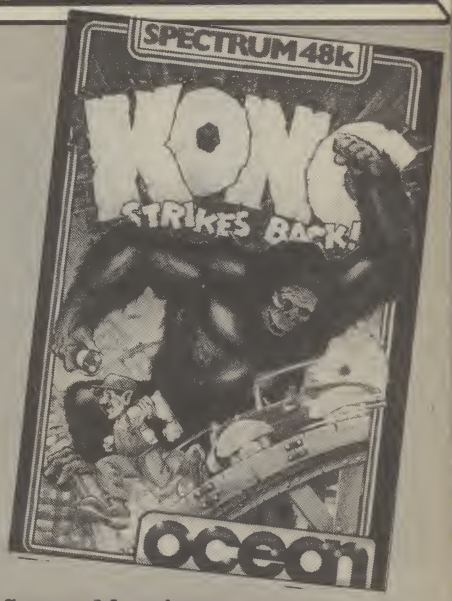
KONG STRIKES BACK

KONG STRIKES BACK is based on a very simple concept, which is surprisingly successful and addictive. Your aim is to travel along a curving and looping track in order to reach the other end. Moving in the opposite direction are roller coaster cars, which Kong pushes towards you. You can avoid the cars by climbing ladders, but you must be careful to position yourself near a ladder as a car approaches, and you must keep an eye open to check that no car is approaching on the track above.

Movement of cars is completely predictable, and you have a supply of bombs with which you can fend off on-coming cars at the last minute, but this remains a remarkably difficult game to perfect. Added complications are that if you pick up bonus points at the right time, you will be able to collect a bonus life and that, if you complete a screen quickly, you will gain more points. These distractions are enough to divert all but the most eagle-eyed players.

There are four screens, each with a different track layout. Once you have completed these four, you run through the same track layouts again, this time with the additional hazards of what appear to be rolling balls, and bouncing hour glasses, but which the cassette sleeve describe as pies and springs.

A well-thought out and immaculately constructed arcade game, Kong Strikes Back is produced by Ocean, 6 Central Street, Manchester.

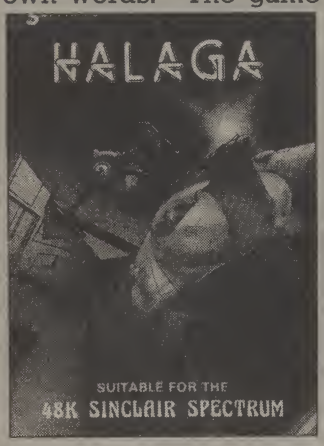


Price: £5.90
Rating: 65%

HALAGA

WHY WRITE a shoot-'em-up invader game in 1985? If you feel there is a good reason, and that this is the type of program for which the public are clamouring, then answer me this. Why write an invader game which is not compatible with the Kempston joystick?

Halaga is perhaps best described in its own words: "The game



consists of four high-res screens moving left and right, you must evade the alien missiles and attempt to clear the sky of aliens." Have we not heard this somewhere before? Do we want to hear it again?

The aliens swoop onto the screen, firing at your base at the foot of the screen. When all the aliens have swept onto the screen, they relax, and hang in the air, moving jerkily a few millimetres to left or right. Unfortunately, in so doing, they partially erase their neighbours, which produces an interesting pattern, although not a very realistic effect.

Once you have destroyed all these rather unintelligent creatures, another attack wave appears, in a different formation, but moving and attacking along very similar lines.

For some reason, although you inhabit one screen, from the sides of which you cannot escape, the aliens inhabit a wraparound screen world, and they are able to leave the left of the screen to appear on the right, or vice versa.

Halaga is produced for the 48K Spectrum by Interceptor Micros, Lindon House, The Green, Tadley, Hampshire.

Price: £5.50
Game type: Invaders
Rating: 35%

HUNCHBACK 2

TIMING IS what you need in **Hunchback 2.** Co-ordination and perfect timing. Arcade enthusiasts may already have these. Less favoured mortals will be spending a very, very long time on screen one.

The aim of the game, as can be guessed by the subtitle, **Quasimodo's Revenge,** is to collect, move or ring the bells on every screen. These are arranged in the most unlikely places; holes in the ground, on islands and even, surprisingly, at the tops of ropes.

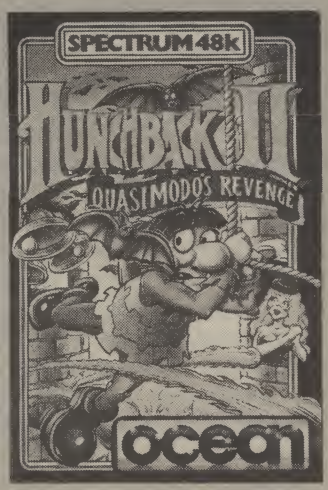
Various lethal objects move regularly around the screen. The trick is to collect all the bells, or to complete some other appointed task involving bells, without being hit by any of these things. Quite why you are being attacked by a bouncing meteorite or by what appear to be flying oysters is not clear, but who cares about a coherent story line, when it is the game that counts?

Work out the correct route across a screen once, and you will probably be able to do it every time. Working out routes, though, must be done by trial and error, trial and repeated error.

This is, in essence, a one route game. You must complete one screen in order to reach the next, and there is a limited amount of room for manoeuvre on any one screen.

Hunchback 2 is produced for the 48K Spectrum by Ocean Software, Ocean House, 6 Central Street, Manchester.

Price: £6.90
Game type: Arcade
Rating: 80%



Questline

Mountains of Ket

After the prize for the Ket trilogy had been won, Cathy Foot felt free to look at the mountain in detail.

THE MOUNTAINS OF KET should be a straightforward enough adventure game. So? Why isn't it? Try it my way.

I feel like a quick adventure and dig out my copy of Ket. It loads safely and a map is begun, but it doesn't get very far, since no-one present can break out of the immediate environs of the village. Re-read such instructions as come with the game. Ah, yes, the mountains are a day's journey away by horseback and there is a horse in the village. Buy horse? Naw — the horse costs twice what I have in my pocket.

If I cannot buy a horse, can I steal one?

The following document was discovered in a cairn at the foot of the cliff. Nothing has been seen of that particular stupid female adventurer since:-

"Swear to God, Mister, I never meant to kill the stableman, all I wanted was his horse. I meant to knock him out, not kill him, but he wouldn't give up. I was forced to kill him. I know Edgar keeps telling me "Don't just kill everything" but horse-thieving is notoriously difficult to get away with, and with my record, deserved or not, I cannot afford to be caught.

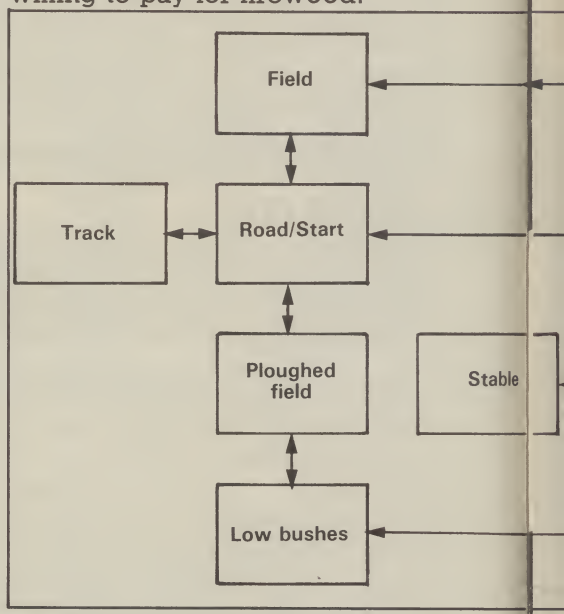
"Honest, Mister, I was innocent of that first murder, it was just that the evidence pointed in my direction — if only I had spent that night sober and in my own inn, instead of playing dice and drinking bad beer in that crooked bar down by the waterfront . . . innocent, but proved guilty as sin. Sure, I took the mission, who wants to die? But I didn't expect to have to kill to get my job done.

"After I had stolen a horse, I could hardly stay in the village, could I? So off into the wide blue yonder, heading east as fast as the horse can go, only to come to a series of dead-ends. The valley is blocked; the cliff face unclimbable and there is no way out of the field full of boulders. I used the tried and true 'put something down, look, move, look' system and I just had not moved.

"I write these few words and leave them where whoever comes after me will find them. If I return from this mission I will pay bloodgeld for the stableman and also pay for the horse I stole. "Let whoever finds this message pray for me and my continued survival until I have paid for these my acknowledged misdeeds."

Shall we try again? What went wrong? Yes, I DO know what went wrong. Trust only to your own efforts. If someone tries to convince you that something is useless, pointless or boring, especially boring, and you then get stuck on the horns of a dilemma, the point where this helpful person misdirected you is a useful point to return to. My son was to blame for the earlier fiasco — he wanted to load **Doomdark's Revenge** and had no patience for Ket. His idea of fun and games has loads of blood, murder and mayhem in it. And, let you not forget, we had not found the way into the mountain, where the level of bloodshed fast reaches his high standards.

If you are reading this you may well have played some or all of the Ket trilogy. If you have, you will know where I went wrong. Yeah, I left the cartographer before finding out that he needed wood to keep warm with and was willing to pay for firewood.



Yes, I have enjoyed a good adventure in Ket. It must rank as one of the better adventures on the market, but I am left a little bewildered as to how the average player manages to break into the real game before going round the bend in utter boredom and despair. I admit quite cheerfully that, without the aid of the Landlord of the Dancing Ogre, I would still be stuck in the village and its environs even though I had decided that more attention should be paid to the cartographer.

In our house, my son got as far in one direction as to buy the axe in the village shop and cut up the log. He failed to make any use of the firewood so made, and, after a few desultory wanderings in and around the village, the game was put away for a few months as uninteresting. When I came to play the game we had forgotten that the log could be chopped up, and thus lost a clue, so it was all to do from scratch.

Another clue which reached me in a somewhat garbled format was The Voices. This is another very important clue. Those voices give you the password which allows you to pass the sentry orcs and goblins without having to fight, so this clue can save you from having to fight your way past the nasties, thus keeping luck and power for more important and necessary battles. As I remember the published form of the clue it says "listen to the voices," which we tried. In my discussion with Mine Host of the Dancing Ogre. I was given the same advice, but I still cannot find the right word to convince the computer that I AM LISTENING. If you have the same problem, the password, suitably encoded, is "SZKOR" (move the letters one further forward in the alphabet to make use of this clue), and is the name of another computer game writ backwards. That ought to be some help to you.

Once you pass into the mountain, the game really takes off. The pace becomes fast and furious. Some of the characters with you in there ignore you, some talk to you and some will fight whatever you do. The guard dog will guard your treasure from those pesky pack rats — while the breed of rats is not specified, they MUST be pack rats, else why would they grab anything you drop almost before you drop it? Perhaps that should have been a guard CAT?

Mind you, there is more to the above statement than that you should drop all your treasure in the room with the dog. Did you remember to take the chain from the field to the west of the village? How can you chain the dog up without it? Too bad, if you left it in the field, it will have to stay there now. You will have to get out or die without it this time.

If you want him to be your guard dog, perhaps you had better feed him — and where better to find food in this Godforsaken place than in the barracks? A few orcs and goblins bother you? Why ever did you take on this mission, then?

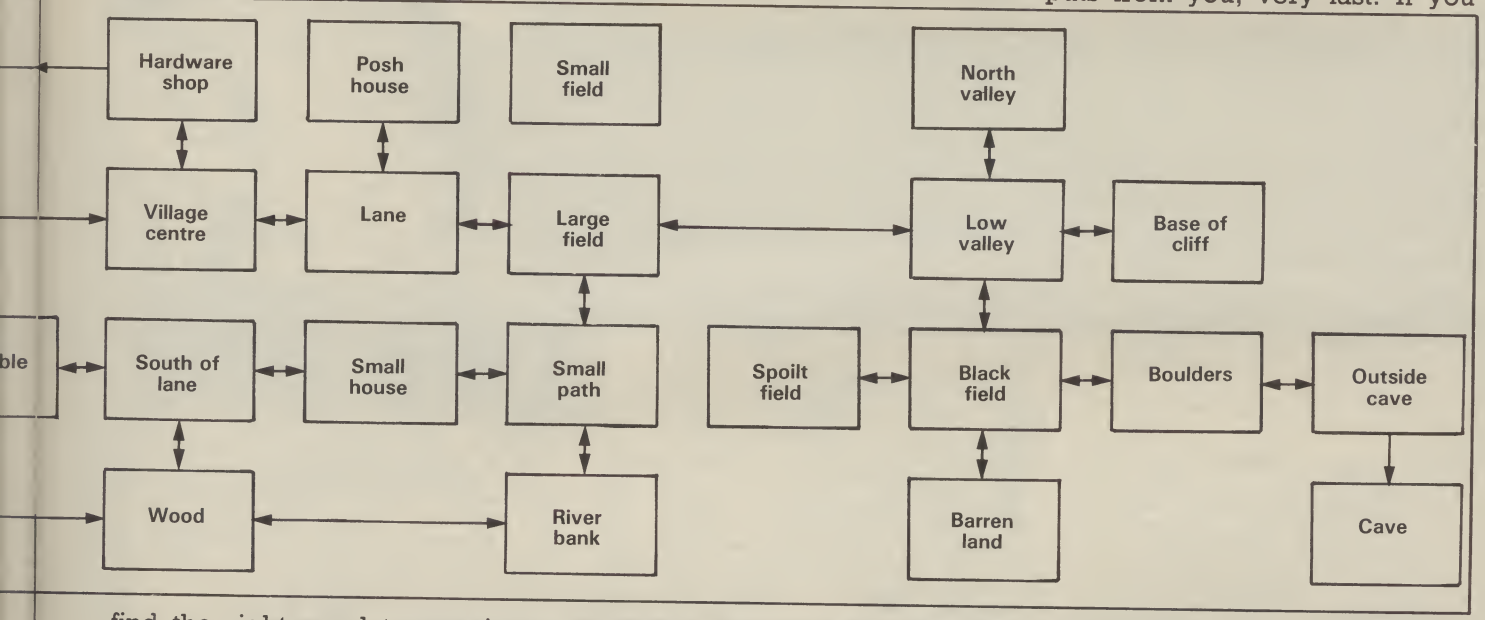
Take it from me — EVERYTHING is important somewhere. That pair of dice on which I spent so much time and effort, which can be discovered at the base of the cliff, comes into its own after you discover a copy of the Goblin Gazette which includes a report on an ogre who loves to gamble. If you lose, you lose the dice, but if you win, you win a magic sword.

Oh, yes, I hope you can swim. If not, forget the ogre, you have to swim to get there, but not among piranha fish, this time.

This is a game with the wall in mint condition when you reach it. I'm sure you remember what to do to pass through the wall with ease and grace, but if you have forgotten — oops, what brand was it again? Never mind, you will remember if you try, you want a hole, don't you?

I am very impressed with the combat system. It is both neat and, once you get used to the fact that it only ever expects two imputs from you, very fast. If you keep a finger on the y and one on the n you can keep that combat moving so fast, you will wonder what hit you as luck and energy run out before your very eyes, especially if you are up against an orc or a goblin. In the village, I made a very good horsethief and murderer, but those orcs and goblins are mean fighters!

Go to it and win!



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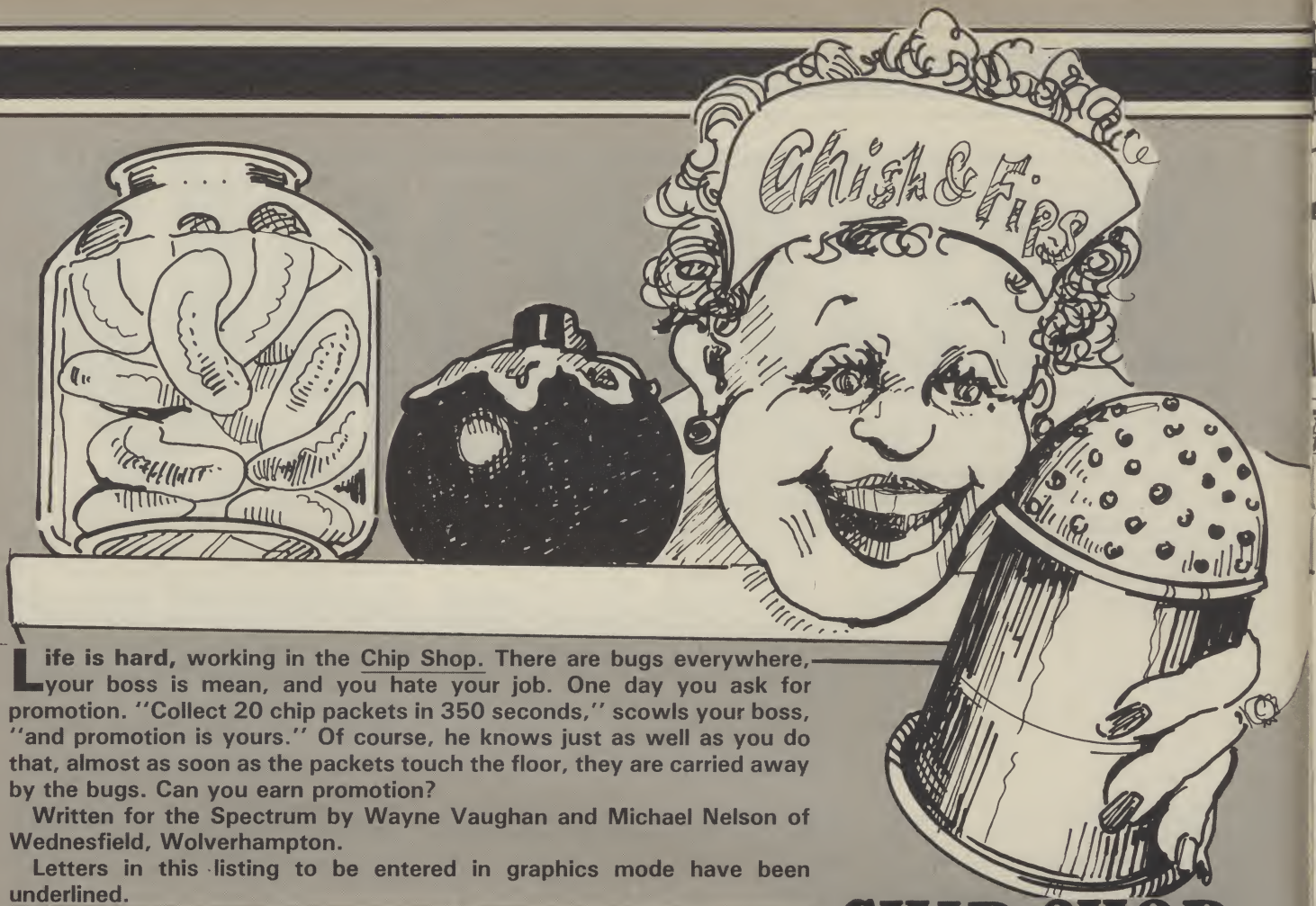


CHIP SHOP

Life is hard, working in the Chip Shop. There are bugs everywhere, your boss is mean, and you hate your job. One day you ask for promotion. "Collect 20 chip packets in 350 seconds," scowls your boss, "and promotion is yours." Of course, he knows just as well as you do that, almost as soon as the packets touch the floor, they are carried away by the bugs. Can you earn promotion?

Written for the Spectrum by Wayne Vaughan and Michael Nelson of Wednesfield, Wolverhampton.

Letters in this listing to be entered in graphics mode have been underlined.

```
  1 PAPER 0: INK 2: BORDER 2
  2 CLS
445 LET G=30
460 LET A$="                "

      CCC CHIP SHOP CCC
 THE AIM OF THE GAME IS TO
 COLLECT THE EMPTY CHIP PACKETS
 IN THE GIVEN TIME, COLLECT 20
 PACKETS SUCCESSFULY AND
 PROMOTION WILL BE YOURS!!!"
470 FOR I=1 TO  LEN A$
475 PRINT A$(I);
480 IF A$(I) <> " " THEN  BEEP
.0006,G
485 IF G=60 THEN  LET G=10
487 LET G=G+1
490 NEXT I
495 PRINT  AT 12,2; FLASH 1; IN
K 4;"DDDBUT BEWARE THE BUGS!!!DD
D"
497 PRINT  AT 15,8;"____": PRIN
T  AT 15,8; OVER 1;"KEYS": PRINT
 "         5-LEFT
           8-RIGHT"
498 PAUSE 300
500 FOR u= USR "a" TO  USR "f"+
7 : READ v: POKE u,v: NEXT u
510 DATA 24,60,126,36,36,36,24,
24
520 DATA 126,66,126,66,126,66,1
26,66
530 DATA 255,231,110,102,60,60,
24,24
540 DATA 90,189,60,126,189,60,9
0,129
555 DATA 24,24,24,24,24,24,24,2
4
560 DATA 255,129,189,165,165,18
9,129,255
565 CLS : FOR Y=-40 TO 40: BEEP
.01,Y: NEXT Y
567 LET TIME=350
570 FOR d=1 TO 30
580 PRINT  AT 15,d; INK 5;"E"

590 NEXT d
591 LET S=0
593 PRINT  AT 17,1;"TIME=": PRI
NT  AT 19,1;"SCORE ";S
600 LET X=15
615 LET a= INT ( RND *28)+2
617 LET b=1
620 PRINT  AT b,a;"D": BEEP .00
1,B
640 PRINT  AT b-1,a; INK 1;"E"

643 PRINT  AT 14,a; INK 3;"C"

644 LET b=b+1
645 IF X=A AND B <> 13 THEN  LE
T S=S+10: PRINT  AT 19,6; INK 7;
S: IF TIME=0 OR S=200 THEN  GO T
O 2000
646 PRINT  AT 13,x; INK 7;"  A
": PRINT  AT 14,x; INK 6;"  B  "

647 IF  INKEY$ ="8" AND X <= 27
 THEN  LET x=x+1
648 IF  INKEY$ ="5" THEN  LET X
=X-1
649 IF b=14 THEN  GO SUB 660
650 LET TIME=TIME-1
655 PRINT  AT 17,10;TIME: IF TI
ME=100 THEN  PRINT  AT 17,10;"
 ": IF TIME=10 THEN  PRINT  AT 1
7,10;"    "
656 IF TIME=0 THEN  GO TO 1000

659 GO TO 620
660 FOR b=13 TO 0 STEP -1
670 PRINT  AT b,a;"D"
675 PRINT  AT b+1,a;" ": BEEP .
01,B
676 IF B=1 THEN  GO SUB 615
680 NEXT B
2000 CLS : IF S=200 THEN  PRINT
 AT 2,10; INK 6; FLASH 1;"WELL D
ONE": PAUSE 100: GO TO 2011
2010 PRINT  AT 2,10; INK 5; FLAS
H 1;" SORRY TIME OUT ": PAUSE 10
0
2011 PRINT : PRINT "   DO YOU WA
NT ANOTHER GO?"; INK 3;"(Y/N)"

2012 IF  INKEY$ ="Y" OR  INKEY$
="y" THEN  CLS : GO TO 565
2013 IF  INKEY$ ="N" OR  INKEY$
="n" THEN  STOP
2015 GO TO 2012
```

SPROGS

THE SPROGS MEET JIM THE CABIN-BOY ON BOARD THE PIRATE SHIP 'BOOTY'
I MUST COLLECT ALL THE KEYS ON THE SHIP IN ORDER TO ESCAPE
HOW CAN WE AVOID THE PIRATES?
DISGUISES!
SHIVER ME TIMBERS
NOT VERY SUCCESSFUL DISGUISES, ARE THEY?
WE MUST BE VERY CAREFUL
THE SPROGS GO IN SEARCH OF THE KEYS
SNAP
ITS ALRIGHT, HE'S LISTENING TO PIRATE RADIO
TO THE GALLEY
WHAT ARE THEY DOING?
WHAT DO YOU EXPECT PIRATES TO DO BUT RATE PIES!
117,118,119 - WHERE IS THE LAST KEY?
IN THE HOLD
IN THE HOLD
HOW DID YOU KNOW?
THATS EASY EGGS MARK THE SPOT!
GROAN
SEEMS ALMOST TOO EASY
CREAK
JIM OPENS THE DOOR
BUT UNFORTUNATELY-
SQUARK
SQUARK
SQUAAARK
HA-HA-HA
THEY RECKONED WITHOUT THE PARROT-TROOPERS.

-GOBBLER-

Move around the plain of dots using the cursor keys. Your aim is to accumulate as many points as possible by munching the dots. As the game progresses, walls will be built on the plain, which block your way. Occasionally red and green apples will appear, which can be eaten for extra points.

Gobbler was written for the Spectrum by Anthony Pope of Quedgeley, Gloucester. It is compatible with the Currah Microspeech system, but works whether or not you own the system.

Some letters in this listing have been underlined to show that they should be entered in graphics mode.

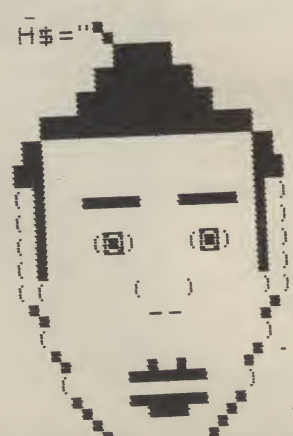
```
  1 GO SUB 300: LET hi=0
  10 LET c=0: LET k=50: LET l=10
0: LET x=11: LET y=16: LET sc=0:
 LET ti=400: LET keys=0
  15 FOR b=0 TO 31: PRINT  AT 1,
b;" ": NEXT b
  20 PRINT  AT 1,0;"SCORE:";sc;
AT 1,12;"HI:";hi: PRINT  AT 1,23
;"TIME:";ti;" ": LET ti=ti-1
  30 FOR e=2 TO 21: PAPER 1: PRI
NT  AT e,0;"A": PRINT  AT e,31;"
A": NEXT e: FOR f=1 TO 30: PRINT
  AT 2,f;"A": PRINT  AT 21,f;"A"
: NEXT f
  40 PAPER 0: FOR g=3 TO 20: FOR
 h=1 TO 29: PRINT  AT g,h; BRIGH
T 1;"BB": NEXT h: NEXT g
  50 IF  INKEY$ ="5" THEN  LET y
=y-1: LET c=0
  60 IF  INKEY$ ="6" THEN  LET x
=x+1: LET c=0
  70 IF  INKEY$ ="7" THEN  LET x
=x-1: LET c=0
  80 IF  INKEY$ ="8" THEN  LET y
=y+1: LET c=0
  90 IF  INKEY$ ="" THEN  LET c=
c+1
  95 IF  ATTR (x,y)=4 THEN  LET
sc=sc+100: BEEP .2,-20: BEEP .1,
-10
  100 IF  ATTR (x,y)=2 THEN  LET
sc=sc+500: BEEP .3,-10: BEEP .1,
-20: BEEP .2,1
  105 IF  ATTR (x,y)=15 THEN  GO
TO 200
  110 IF  ATTR (x,y)=71 THEN  LET
 sc=sc+5: BEEP .1,-50
  115 PRINT  AT x,y; INK 6;"D"
  120 IF k=10 THEN  PRINT  AT RN
D *17+3, RND *29+1; PAPER 0; INK
 4;"C"
  125 IF l=10 THEN  PRINT  AT RN
D *17+3, RND *29+1; PAPER 0; INK
 2;"C"
  130 LET k=k-1: LET l=l-1
  140 IF k <= 0 THEN  LET k=30
  145 IF l <= 0 THEN  LET l=60
  150 PRINT  AT  RND *18+3, RND *
30+1; INK 7; PAPER 1;"AA"
  155 IF c=15 THEN  GO TO 200
  160 IF  INKEY$ ="p" THEN  PAUSE
 0
  170 PRINT  AT 1,0;"SCORE:";sc;
AT 1,12;"HI:";hi: LET ti=ti-1: P
RINT  AT 1,23;"TIME:";ti;" "
  180 IF ti <= 0 THEN  GO TO 200
  185 PRINT  AT x,y;" "
  190 GO TO 50
  200 BEEP .5,-20: BEEP .2,-30: P
RINT  AT 12,11; PAPER 2; INK 6;
FLASH 1;"GAME OVER!": LET s$="g(
ay)m (eau)v(er)": LET g$=""
  210 PAUSE 50: INPUT #1;"Do you
want another go(y/n)?";g$
  220 IF hi<sc THEN  LET hi=sc
  230 IF g$="y" OR g$="Y" THEN  G
O TO 10
  240 IF g$="n" OR g$="N" THEN  S
TOP
  250 STOP
  300 FOR g= USR "a" TO  USR "e"+
7
  310 READ h: POKE g,h: NEXT g
  320 DATA 255,128,128,128,255,16
,16,16
  330 DATA 0,0,16,56,56,16,0,0
  340 DATA 16,8,42,127,127,127,62
,28
  350 DATA 60,126,219,153,255,219
,102,60
  360 DATA 0,136,136,136,136,244,
128,128
  400 BORDER 0: PAPER 0: INK 7
  410 CLS : PRINT  AT 0,8;"BBB~GO
BBLER~BBB"; AT 0,7; INK 6;"D"; A
T 0,23;"D"
  420 PRINT  AT 1,11;"(ESPEECH)"

  430 PRINT  AT 3,0;"   You are t
he gobbler and must eat as many
dots,green or red   apples as yo
u can in the time   allowed."
  440 PRINT  AT 8,0;"   Little wa
lls appear and get  bigger and l
onger as the game   progresses a
nd they will block  or trap you.
"
  450 PRINT  AT 13,0;"   The game
 ends if the time    runs out,if
 you run into a wall or hang abo
ut too long."
  460 PRINT  AT 17,6;"USE ARROWED
 KEYS:5-8"
  470 PRINT  AT 18,4; INK 6;"SCOR
ING: "; INK 7;"B"; INK 6;"=5   P
OINTS"; AT 19,13; INK 4;"C"; INK
 6;"=100   ""; AT 20,13; INK 2;"
C"; INK 6;"=500   ""
  480 PRINT  AT 21,7; INK 7;"PRES
S ""p"" TO PAUSE": PAUSE 100: LET
 s$="press en(ee) k(ee) t(ouu) pl
(ay)": PRINT  AT 21,4; FLASH 1;"
 PRESS ANY KEY TO PLAY ": PAUSE
0
  500 RETURN
```

You star in this program as a spotty faced lout. After eating too many bars of unhealthy chocolate you have been infested by a plague of Zitz. Move your medicated sponge with cursor keys 5 to 8 in order to clear your face of as many spots as possible in the time given.

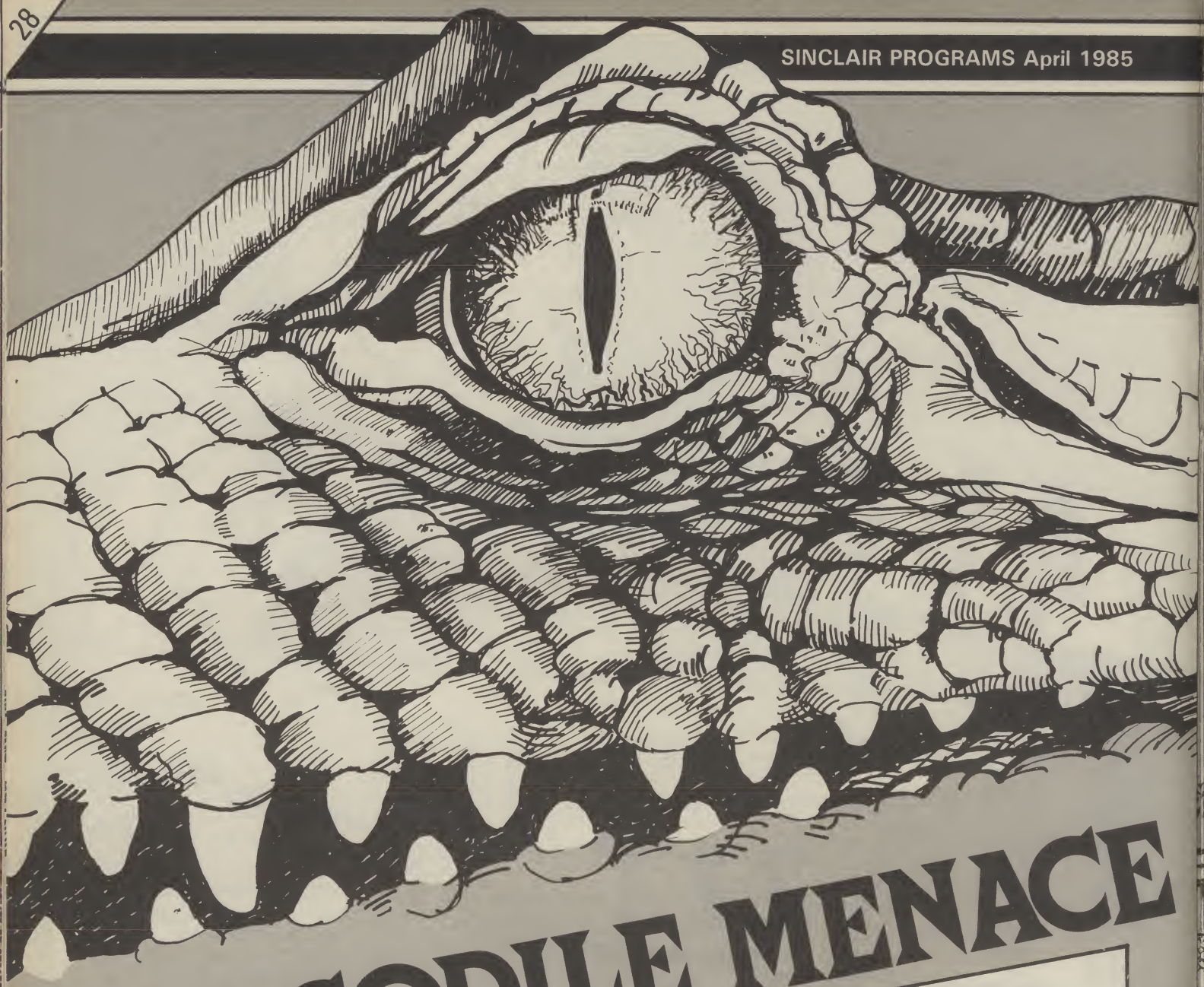
Written for the 16K ZX-81 by Steve and Jason Kennedy of Warminster, Wiltshire.

ZITZ

```
  40 PRINT AT 0,3;"**************
**************"
  50 PRINT AT 1,3;"*             PRESEN
TED BY       *";AT 2,3;"*STEVE AND
 JASON KENNEDY*"
  60 PRINT AT 3,3;"**************
**************"
 100 PRINT AT  6,8;"
  ZIT
  ZIT
"
 200 PRINT AT 13,0;"
                                "
 300 PRINT AT 16,1;"PRESS ANY KE
Y FOR INSTRUCTIONS"
 310 IF INKEY$="" THEN GOTO 310
 320 CLS
 350 PRINT AT 5,0;" YOU ARE A SP
OTTY FACED LOUT.        YOU MUST TR
Y TO CLEAR THE            ZITZ OFF I
N A LIMITED TIME          WITH THE S
PONGE ""▒"",YOUR          HIGHEST SC
ORE WILL BE IN THE        HALL OF FA
ME."
 360 PRINT AT 17,6;"PRESS A KEY
TO PLAY"
 370 PRINT AT 16,0;" USE NORMAL
CURSOR KEYS TO MOVE."
 400 IF INKEY$="" THEN GOTO 400
 700 LET S$="ZX-81"
 720 LET HI=0
 730 CLS
 740 LET H$="
```



```
                                "
 745 PRINT AT 1,5;H$
 750 LET T=0
1020 LET D=VAL "25"
1030 LET S=VAL "0"
1040 LET C=VAL "12"
1050 LET D=D+(INKEY$="8")-(INKEY
$="5")
1060 LET C=C+(INKEY$="6")-(INKEY
$="7")
1070 PRINT AT C,D;
1080 LET A=VAL "PEEK (PEEK 16398
+256*PEEK 16399)"
1100 IF A=VAL "27" THEN LET S=S+
VAL "10"
1110 PRINT AT C,D;"▒"
1115 IF INKEY$<>"" THEN PRINT AT
 C,D;" "
1120 PRINT AT RND*4-15,RND*10-12
;".";AT 0,20;"SCORE ";S
1125 PRINT AT 1,10;"HIGH ";HI;"
BY ";S$
1130 LET T=C
1140 IF T=15 THEN GOSUB 5000
1200 GOTO 1050
3020 GOTO 1020
5000 CLS
5010 PRINT AT 11,9;"YOUR SCORE W
AS ";S
5050 PRINT AT 9,10;"**WELL**DONE
**"
5060 PRINT AT 21,5;"  PRESS ANY
KEY "
5070 IF INKEY$="" THEN GOTO 5070
6010 IF S>HI THEN GOTO 6030
6011 IF S<HI THEN GOTO 6012
6012 FOR N=1 TO 10
6013 NEXT N
6020 IF INKEY$="" THEN GOTO 6020
6022 CLS
6024 GOTO 730
6030 PRINT AT 5,0;"YOU HAVE CLEA
RED THE MOST ZITZ."
6035 PRINT "PLEASE ENTER YOUR FI
RST NAME."
6040 LET HI=S
6050 INPUT S$
6060 IF LEN S$>10 THEN GOTO 6050
6070 CLS
6080 GOTO 730
7000 SAVE "ZITZ"
7100 GOTO 1
```



CROCODILE MENACE

```
  10 LET SCORE=0
  20 LET SHOTS=20
  30 LET A=15
  40 LET B=1
  50 LET X=20
  60 LET Y=INT (RND*18)+5
 100 FOR F=1 TO 22
 110 PRINT "▒",,
 120 NEXT F
 130 PRINT AT 21,1;"▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒"
 140 PRINT AT X,Y-1;"▟▙▙"
 150 PRINT AT A,B;"▙"
 160 PRINT AT A,B;" "
 170 LET A=A+(INKEY$="A" AND A<20)-(INKEY$="1" AND A>0)
 180 IF INKEY$="P" THEN GOTO 200
 190 GOTO 150
 200 PRINT AT A,B;"▙"
 210 FOR F=1 TO 21-A
 220 PRINT AT A,B;">"
 230 PRINT AT A,B;" "
 240 LET B=B+1
 250 NEXT F
 300 FOR F=1 TO 20-A
 310 PRINT AT A,B;"V"
 320 PRINT AT A,B;" "
 330 LET A=A+1
 340 NEXT F
 400 IF B=Y THEN GOTO 500
 410 IF B=(Y-1) OR B=(Y+1) THEN GOTO 600
 420 PRINT AT A,B-1;"▚▄▞"
 430 FOR F=1 TO 2
 435 NEXT F
 440 PRINT AT A,B-1;"   "
 445 PRINT AT X,Y-1;"▟▙▙"
 446 PRINT AT 10,10;"MISSED"
 448 FOR F=1 TO 50
 449 NEXT F
 450 LET SHOTS=SHOTS-1
 460 IF SHOTS=0 THEN GOTO 1000
 465 CLS
 470 GOTO 30
 500 FOR F=1 TO 5
 510 PRINT AT X,Y-1;":::";AT X,Y-1;"+++";AT X,Y-1;"***";AT X,Y-1;"///";AT X,Y-1;"..."
 520 NEXT F
 530 PRINT AT 10,10;"DIRECT HIT"
 540 FOR F=1 TO 50
 550 NEXT F
 560 LET SHOTS=SHOTS+1
 570 LET SCORE=SCORE+1
 580 IF SHOTS=20 THEN GOTO 1000
 590 CLS
 595 GOTO 30
 600 PRINT AT A,B-1;"▚▄▞"
 610 PRINT AT A,B-1;"   "
 615 PRINT AT X,Y-1;"▟▙▙"
 617 FOR F=1 TO 10
 620 PRINT AT X,Y;"+";AT X,Y;":";AT X,Y;"-";AT X,Y;"/";AT X,Y;"*"
 630 NEXT F
 640 PRINT AT 10,10;"INDIRECT HIT"
 650 FOR F=1 TO 50
 660 NEXT F
 670 LET SHOTS=SHOTS+1
 680 LET SCORE=SCORE+.5
 690 IF SHOTS=20 THEN GOTO 1000
 695 CLS
 700 GOTO 30
1000 CLS
1010 PRINT AT 0,10;"GAME OVER"
1020 PRINT
1030 PRINT "SCORE:";SCORE
1040 PRINT
1050 IF SCORE<5 THEN LET R$="COOK"
1052 IF SCORE>5 AND SCORE<10 THEN LET R$="BOMBADIER"
1054 IF SCORE>10 THEN LET R$="OFFICER"
1060 PRINT "RATING:";R$
1070 PRINT AT 10,5;"PRESS (A/K) TO PLAY AGAIN"
1080 PAUSE 4E4
1090 CLS
1100 RUN
5000 SAVE "BATTLE"
5010 RUN
```

AAAARGH! On your screen you see the ship of the evil Baron von Crocken. On board that ship is the lethal purple spotted crocodile which he hopes will help him in his ruthless bid to take over the country. Only you can save all that is dear to you by shooting down the ship and the purple spotted crocodile it contains. Move your gun sights up with 1, down with A and fire with P.

Crocodile Menace was written for the 16K ZX-81 by Jason Singleton of Dibden, Southampton.

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You've got it Licked

TO GAIN infinite lives on **Kosmic Kanga,** add POKE 36212 to the loader program.
S Lambert,
South Humberside.

IF 48K Spectrum owners enter POKE 23609,40 a BEEP will be heard whenever a key is pressed on the computer.
Nicholas Moyle,
Coaley, Glos.

POKE 16511,0 will prevent anyone from editing any part of your ZX-81 programs. If anyone attempts to edit or alter a line after this has been entered, the program will crash. Cancel this command with POKE 16511,255.
Stephen Tait, aged 12,
Tyne and Wear.

GAIN infinite lives on **Manic Miner** by adding 25 POKE 35136,0 to the loader program.
Gregory Hill,
Henleage, Bristol

GAIN infinite lives on **Moon Alert** by Merging the loader program and adding POKE 39754,0.
S Lambert, aged 9,
Grimsby, Humberside

IF ZX-81 owners want to stop people breaking into their machine code programs using RAND USR 836 they should enter the following lines at the end of their programs.

```
9995 LET X=PEEK 16397
9996 POKE 16397,0
9997 SAVE "program name"
9998 POKE 16397,X
9999 GOTO 5
```

Donal Horgan, aged 12,
Mayfield, Cork

TIPS for **The Hobbit** from Melbourne House are: Wear the ring twice in each location in the forest. Do not answer Gollum's riddles, or you will be killed from behind. Examine the magic door in the great halls, and then open it. In the goblin's dungeon ask Thorin to open the window, pick you up and then go.
Steven Martin,
Craigend, Glasgow.

GAIN INFINITE lives on **Atic Atac** with POKE 36519,0. Stop energy drains in the same program with POKE 35353,0. To add these POKEs to the program, load the game with MERGE "" instead of LOAD "". When OK appears on screen; stop tape, list the program and enter the POKEs. Then RUN and start tape.
Thomas Hindson,
Oldham, Manchester.

TO PRINT on line 23 of your 16 ZX-81 screen, enter POKE 16418,0.
John Biggington,
Ashford, Kent.

To get the lazer gun in **Pyjamarama.** Put £1 coin in the change machine to give you the penny. Take the penny to the toilet and exchange it for the hammer. Use the hammer to smash the glass in the lift and reach the fire extinguisher. Go to the fire, fall down and get the key. Take this key to the snooker room and exchange it for the lazer gun. To fill the lazer gun, go to the battery.
Jason Humphries,
Coventry.

THE FOLLOWING items in **Pyjamarama** are red herrings although, to score 100%, it is necessary to pick up and drop all items: towel, crystal orb, plant pot, joy stick, radio, cooking bowl, sword, moon crystal, beach ball and round key.

Hugo Pena, Bishopston, Bristol.

TO REMOVE the monsters from **Sabre Wulf,** load the program with MERGE "", stop the tape and list the program when the OK message comes up. Then enter POKE 39702,30. Start the tape again, and RUN the program.

S Lambert, Grimsby, Humberside

ZX-81 OWNERS, break into machine code programs by entering these two commands before you load a program. FAST (Newline) RAND USR 836 (Newline). When the game had loaded C/O should appear on the left hand side of your screen.

Paul Saunders, Sheerness, Kent.

Pen-friends

Jurg Romann, Dorfstrasse 47, CH 8184 Bachenbulach, Switzerland is 16 years old and owns a 48K Spectrum with Interface 2. Currah speech, light pen and some programs. He would like to write to someone with whom he can exchange hints, tips and programs. Jurg is willing to correspond in French, German or English.

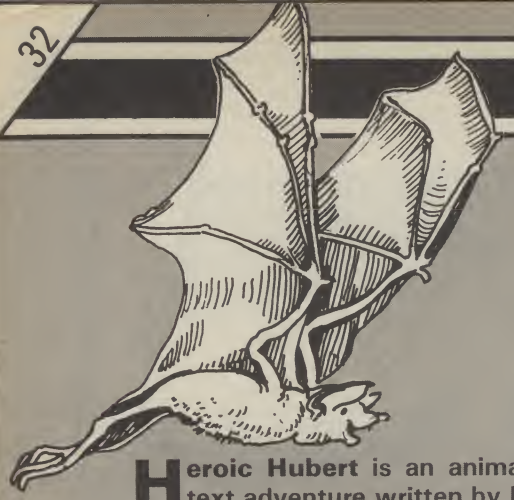
Carol Davies, 39 Anneslay Road, Wallasey, Merseyside would like to hear from anyone who is crazy about the 48K Spectrum. Carol has been playing **The Hobbit** recently, and has many useful playing tips.

Ann u.d. zon, P Breughelstrasse 40, 1964 EP Heemskerk, Holland owns a 48K Spectrum with two microdrives. She would like to correspond with someone with whom she can swap program listings and information.

Neil Mealey, Eastwood, Balquhidder, by Lochearn Head, Perthshire owns a 16K ZX-81 and is having great problems in finding new programs for it. He is also having problems with one of the adventure programs he does own, **Inca Curse.** He would like to hear from other 16K ZX-81 owners.

Michael Lenyhaugh, 152 Park Lane, Knypesley, Biddulph, Stoke-on-Trent, ST8 7BQ would like to correspond with other English ZX-81 owners who are around the age of 10 and who own a ZX-81.

Billy Bennett, 3 Beaumont Road, Yate, Bristol owns a 16K ZX-81. He is a beginner and needs a penfriend who can give him some help with the more complicated aspects of Basic programming, such as PEEKs and POKEs.



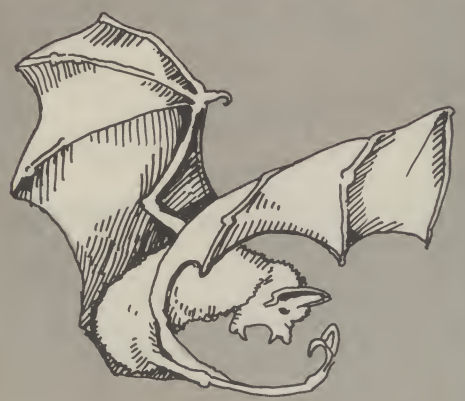
HEROIC H

Heroic Hubert is an animated text adventure written by Darren Wombwell of Skegby, Nottingham.

In it, you play the role of the intrepid hero, Hubert, who must cross the caverns of fire in search of the fire rings. On the way he meets many terrors: swinging spiders, perpetual flames and flying vampire bats. There are pits in which he can hide, steps to negotiate, and ropes on which he can swing to safety. He is also racing against the clock, and the time is shown slowly ticking away. Hubert moves left with key p, right with key o and climbs with key z. He will jump to the left with 0, and to the right with P.

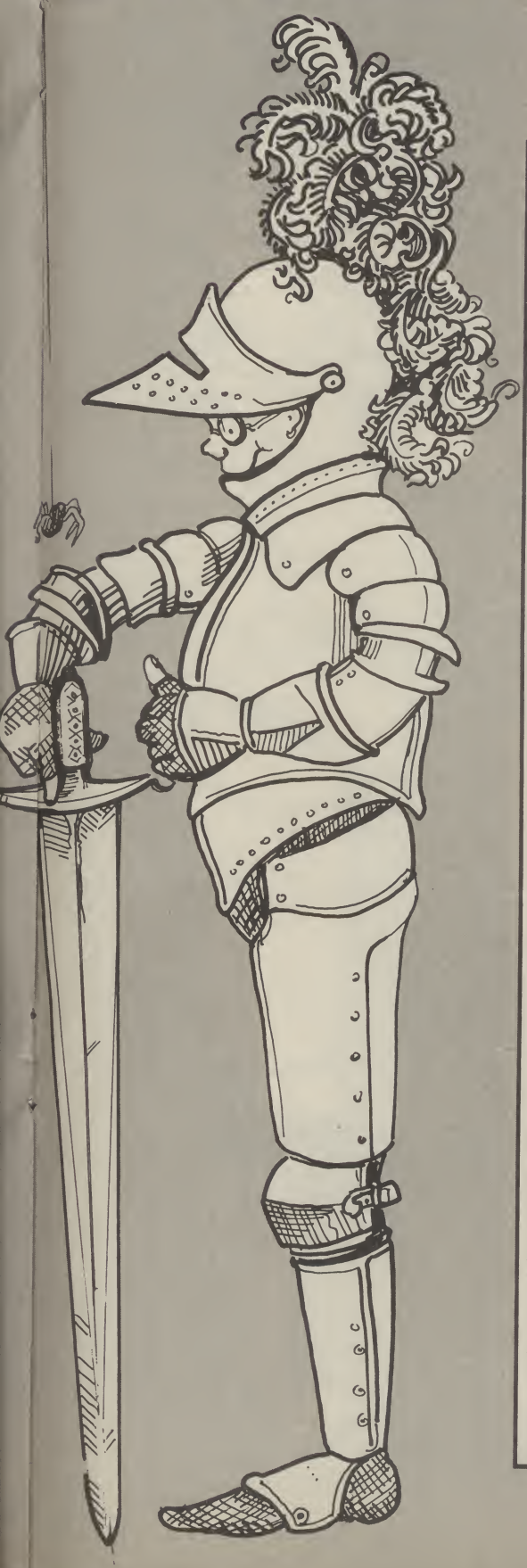
Due to the complexity of this program, it will only RUN on the 48K Spectrum.

The listing includes a large number of graphics characters. Where letters are to be entered in graphics mode they have been underlined. Where block graphics are to be entered, the appropriate graphics instructions have been put within brackets and underlined. Refer to page five for help with the graphics instructions. Remember that the brackets are there to separate the instructions from the main body of the listing, and that the colons are there to separate the instructions from each other. Consequently, neither brackets nor colons should be entered.



```
    1 CLEAR 65000: BORDER 0: PA
PER 0: CLS : GO SUB 700
   3 DIM h(8): DIM l(8): DIM m(8
)
   4 LET l(1)=88: LET l(2)=176:
LET m(1)=10: LET m(2)=-10
   5 LET h(1)=255: LET h(2)=254

   6 FOR n=3 TO 7 STEP 2: LET m(
n)=m(1): LET l(n)=l(1): LET h(n)
=h(1): NEXT n
   7 FOR n=4 TO 8 STEP 2: LET m(
n)=m(2): LET l(n)=l(2): LET h(n)
=h(2): NEXT n
   9 LET t=0: LET r$="": LET li=
3
  10 LET y=7: LET x=8: LET i$=""
: LET ly=7: LET lx=8
  11 FOR f=1 TO 8: LET a$(f,6,35
)="S": LET a$(f,10,56)="S"
  12 LET a$(f,10,84)="S": LET a$
(f,7,117)="S": NEXT f
  14 PAPER 0
  15 PRINT  AT 0,6; INK 6;"HEROI
C HUBERT AND THE"; AT 1,9;"CAVER
NS OF FIRE"
  16 PRINT  AT 1,6; INK 2;"(3*g3
)"; AT 1,24;"(3*g3)"; AT 2,9;"(1
5*g3)"
  17 FOR n=6 TO 15: PRINT  AT n,
1; INK 5;"(7*isp:ig5)"; AT n,24;
"(g5:7*isp)": NEXT n
  18 PRINT  AT 6,8; INK 5;"(ig4:
15*g3:g7)"; AT 15,8;"(ig1:15*ig3
:ig2)"; AT 4,2;"(9*ig3:11*sp:9*i
g3)"; AT 5,2;"(3*isp:4*sp:2*isp:
11*sp:3*isp:4*sp:2*isp)"
  19 PRINT  AT 3,3; INK 6;"BEST
TIME"; AT 5,5;ht; AT 3,22; INK 7
;"YOUR TIME"; AT 5,25;t
  20 PRINT  AT 17,2; INK 4;"(ig4
:5*g3:ig4:3*g3:g7:sp:ig4:9*g3:g7
:ig4:4*g3:g7)"; AT 18,2;"(ig5:5*
sp:ig5:3*sp:g5:sp:ig5:9*sp:g5:ig
5:4*sp:g5)"; AT 19,2;"(ig1:5*ig3
:ig5:3*sp:g5:sp:ig1:9*ig3:ig2:ig
1:4*ig3:ig2)"; AT 20,2;"(6*isp:i
g1:3*ig3:ig2)"
  21 PRINT  AT 18,3; INK 7;"LIVE
S"; AT 18,15; INK 3;"FIRERINGS";
 AT 18,26; INK 2; PAPER 6;r$
  22 FOR n=1 TO 3: PRINT  AT 18,
8+n; INK n;"H"; AT 19,8+n; INK n
;"I": NEXT n
  23 PRINT  AT 21,3; INK 7;"crea
ted by D.WOMBWELL @1984"; AT 10,
16; INK 1; PAPER 6;"F"; AT 11,16
; INK 1; PAPER 6;"G"
  24 INK 2: PAPER 6
  25 LET f=1: GO SUB 412
  30 BORDER  INT ( RND *6)+1
  31 IF  INKEY$ <>"" THEN  PAUSE
50: GO TO 30
  34 BORDER 0: GO SUB 540
 100 FOR f=1 TO 8
 101 GO SUB 412: GO SUB 430
 103 IF a$(f,y-1,x) >= "(isp)" O
R a$(f,y,x) >= "(isp)" THEN  LET
 l=104: GO TO 500
 104 GO SUB 400: NEXT f
 105 FOR f=7 TO 2 STEP -1
 106 GO SUB 412: GO SUB 430
 108 IF a$(f,y-1,x) >= "(isp)" O
R a$(f,y,x) >= "(isp)" THEN  LET
 l=109: GO TO 500
 109 GO SUB 400: NEXT f
 110 GO TO 100
 399 REM ***movement subroutine*
**
 400 IF a$(f,y+1,x)<>"(isp)" OR a
$(f,y+1,x)>"E" THEN  LET y=y+1:
FOR n=1 TO 5: NEXT n: LET i$= IN
KEY$ : GO TO 406
 402 LET i$= INKEY$
 403 IF i$="P" THEN  GO TO 458

 404 IF i$="O" THEN  GO TO 462

 406 IF i$="p" THEN  GO TO 450

 408 IF i$="o" THEN  GO TO 454

 409 IF i$="z" AND a$(f,y,x)="E"
 THEN  LET y=y-1
 410 IF t<10000 THEN  LET t=t+1:
 PRINT  AT 5,25; INK 7; PAPER 0;
t
 411 POKE 23675,l(f): POKE 23676
,h(f): RETURN
 412 PRINT  AT 7,9;a$(f,y-4,x-7
TO x+7); AT 8,9;a$(f,y-3,x-7 TO
x+7); AT 9,9;a$(f,y-2,x-7 TO x+7
)
 414 PRINT  AT 10,9;a$(f,y-1,x-7
 TO x-1); AT 10,17;a$(f,y-1,x+1
TO x+7)
 416 PRINT  AT 11,9;a$(f,y,x-7 T
O x-1); AT 11,17;a$(f,y,x+1 TO x
+7)
 418 PRINT  AT 12,9;a$(f,y+1,x-7
 TO x+7); AT 13,9;a$(f,y+2,x-7 T
O x+7); AT 14,9;a$(f,y+3,x-7 TO
x+7)
 420 RETURN
 429 REM ***print out 2***
 430 IF i$="p" THEN  PRINT  AT 1
0,16; INK 1; PAPER 6;"F"; AT 11,
16;"G": BEEP .0125,m(f): GO TO 4
40
 432 IF i$="o" THEN  PRINT  AT 1
0,16; INK 1; PAPER 6;"H"; AT 11,
16;"I": BEEP .0125,m(f): GO TO 4
40
 434 IF i$="P" THEN  PRINT  AT 1
0,16; INK 1; PAPER 6;"F"; AT 11,
16;"G": FOR n=1 TO 7 STEP 2: BEE
P .01,n*n: NEXT n: GO TO 440
 436 IF i$="O" THEN  PRINT  AT 1
0,16; INK 1; PAPER 6;"H"; AT 11,
16;"I": FOR n=1 TO 7 STEP 2: BEE
P .01,n*n: NEXT n: GO TO 440
 438 IF i$="z" THEN  PRINT  AT 1
0,16; INK 1; PAPER 6;"F"; AT 11,
16;"G": FOR n=2 TO 6: BEEP .01,n
*n: NEXT n
 440 RETURN
 450 IF a$(f,y,x+1)<>"(isp)" OR a
$(f,y,x+1)>"D" THEN  GO TO 452

 451 GO TO 410
 452 LET x=x+1: GO TO 410
 454 IF a$(f,y,x-1)<>"(isp)" OR a
$(f,y,x-1)>"D" THEN  GO TO 456

 455 GO TO 410
 456 LET x=x-1: GO TO 410
 458 IF a$(f,y+1,x)<>"(isp)" OR a
$(f,y+1,x)>"E" THEN  LET i$="":
GO TO 410
```

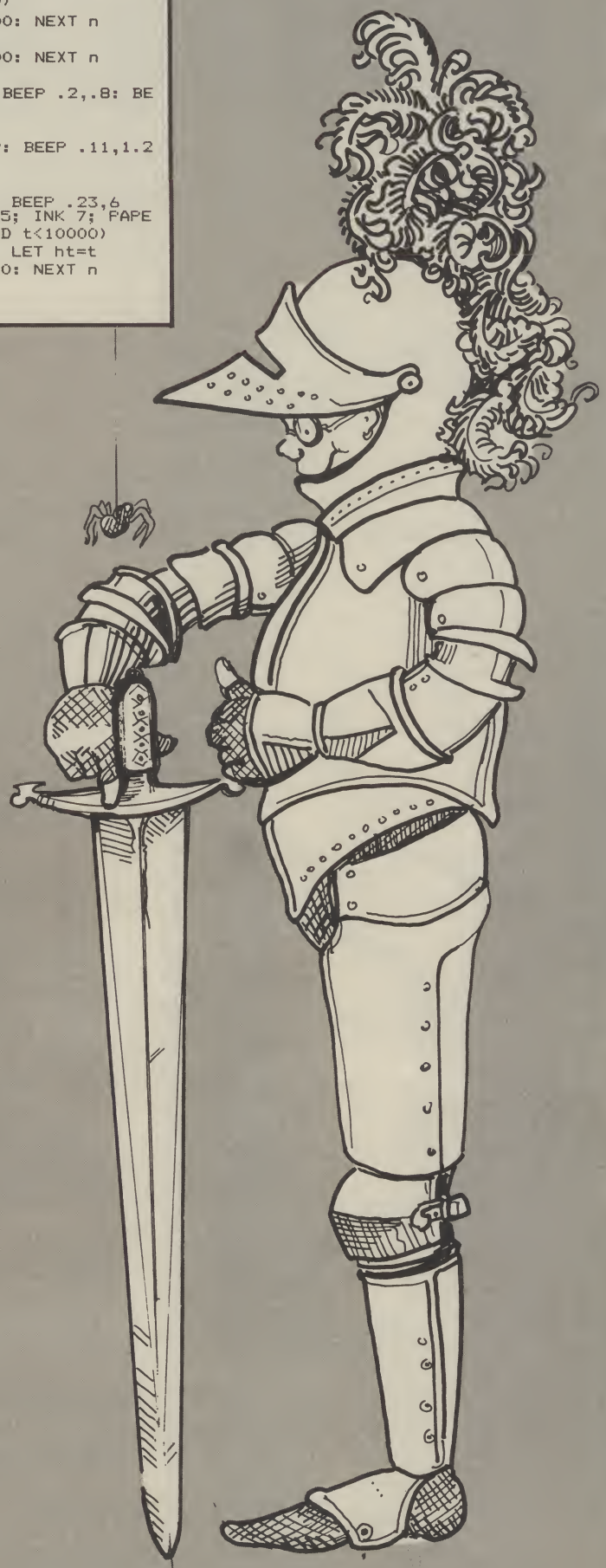
HUBERT



```
 459 IF a$(f,y-1,x+1)<"(isp)" OR
 a$(f,y-1,x+1)>"D" THEN  GO TO 4
61
 460 LET i$="": GO TO 410
 461 LET x=x+1: LET y=y-1: GO TO
 410
 462 IF a$(f,y+1,x)<"(isp)" OR a
$(f,y+1,x)>"E" THEN  LET i$="":
GO TO 410
 463 IF a$(f,y-1,x-1)<"(isp)" OR
 a$(f,y-1,x-1)>"D" THEN  GO TO 4
65
 464 LET i$="": GO TO 410
 465 LET x=x-1: LET y=y-1: GO TO
 410
 501 IF a$(f,y-1,x) <> "E" AND a
$(f,y-1,x) >= "(isp)" THEN  GO T
O 800
 503 IF a$(f,y-1,x)="E" AND a$(f
,y,x)="E" THEN  GO TO 1
 506 IF a$(f,y,x)="S" THEN  GO T
O 525
 507 IF a$(f,y,x)="E" THEN  GO T
O 1
 510 GO TO 800
 525 FOR n=1 TO 8: LET a$(n,y,x)
=" ": NEXT n
 526 LET r$=r$+"S": PRINT  AT 18
,26; INK 2; PAPER 6;r$
 527 GO SUB 540
 528 IF r$="SSSS" THEN  GO TO 95
0
 529 LET ly=y: LET lx=x: GO TO 1

 549 REM ***ring tune***
 550 BEEP .15,-4: BEEP .22,-2: B
EEP .9,7
 552 FOR n=1 TO 2
 553 BEEP .2,-4: BEEP .2,-2: BEE
P .25,-.75: BEEP .25,3.5
 554 NEXT n
 555 BEEP .8,-2: BEEP .15,-7: BE
EP .2,-9
 556 RETURN
 700 REM ***SCENARIO SET-UP***

 701 DIM a$(8,16,124)
 702 FOR f=1 TO 8
 704 FOR n=1 TO 16: LET a$(f,n,1
TO 7)="(7*isp)": LET a$(f,n,118
TO 124)="(7*isp)": NEXT n
 706 LET a$(f,1,8 TO 117)="(110*
isp)"
 708 LET a$(f,2,8 TO 117)=a$(f,1
,8 TO 117)
 709 FOR n=14 TO 16: LET a$(f,n,
8 TO 117)=a$(f,1,8 TO 117): NEXT
 n
 710 LET a$(f,3,8 TO 117)="(isp)
D(isp)D(isp)D(isp)D(10*isp)DDDDD
DDD"
 711 LET a$(f,3,34 TO 117)="(56*
isp)DDDDDDDDDDDDD(15*isp)"
 712 LET a$(f,4,8 TO 25)="D D D
D (9*isp)D": LET a$(f,5,16 TO 24
)="DDDDDDD(2*isp)": LET a$(f,6,2
3 TO 24)="(isp)D"
 714 LET a$(f,4,34 TO 50)="DDDDD
DDDDDDDDDDDD": LET a$(f,6,56 TO
88)="DDDDDDDDDDDDDDDDDDDDDDDDDD
DDDDD"
 715 FOR n=4 TO 5: LET a$(f,n,51
TO 89)="(39*isp)": NEXT n
 716 LET a$(f,3,90 TO 117)="DDDD
DDDDDDDDD(15*isp)": LET a$(f,4,1
03 TO 117)="DDDDDDDDDDDDDDDD"
 718 FOR n=8 TO 12: LET a$(f,n,8
TO n+2)="(7*isp)": NEXT n
 720 LET a$(f,8,10)=" ": LET a$(
f,10,13)="Q": LET a$(f,13,8 TO 3
4)="(12*isp:sp:4*isp)QQQQQQQQQQ"

 722 LET a$(f,12,23 TO 34)="(2*i
sp)QQQQQQQQQQ": LET a$(f,11,24)=
"(isp)": LET a$(f,10,24 TO 25)="
(isp)D"
 724 FOR n=7 TO 11: LET a$(f,n,2
3)="E": NEXT n
 725 FOR n=11 TO 13: LET a$(f,n,
35 TO 45)="(isp)RRRRRRRR(2*isp)"
: NEXT n
 726 FOR n=7 TO 10: IF n=9 THEN
 LET a$(f,n,35 TO 36)="(isp)D":
GO TO 728
 727 LET a$(f,n,35)="(isp)"
 728 NEXT n
 729 LET a$(f,7,34)="D": LET a$(
f,9,45 TO 50)="(isp:4*sp:isp)":
LET a$(f,10,44 TO 50)="(2*isp)RR
RR(isp)": LET a$(f,11,44 TO 56)=
"(2*isp)RRRR(7*isp)"
 730 LET a$(f,12,44 TO 57)="(14*
isp)": FOR n=11 TO 13: LET a$(f,
n,75 TO 117)="(14*isp)RRRRRRRRRR
RRRR(isp)RRRRRRRRRR(3*isp)": NE
XT n
 732 LET a$(f,13,46 TO 74)="(29*
isp)": LET a$(f,12,74)="(isp)":
LET a$(f,10,76)="Q"
 734 LET a$(f,10,88 TO 117)="(is
p)D               D(isp)D
(3*isp)"
 735 LET a$(f,9,103)="Q": LET a$
(f,9,116 TO 117)="(2*isp)": LET
a$(f,8,117)="(isp)"
 738 LET a$(f,10,44-f)="A"
 739 REM ***MONSTER ANIMATION***

 740 LET a$(f,11,14+f TO 15+f)="
KL"
 741 IF f<5 THEN  LET a$(f,9,47
TO 48)="BC": GO TO 743
 742 LET a$(f,9,47 TO 48)="TC"

 743 LET a$(f,12,57+f TO 58+f)="
UU": LET a$(f,12,64+f TO 65+f)="
UU"
 745 LET a$(f,10,102-f)="A": IF
f=8 THEN  LET a$(f,10,102-f TO 1
03-f)=" A"
 746 LET a$(f,9,93+f TO 94+f)="K
L"
 748 IF f<5 THEN  LET a$(f,10,10
6 TO 113)="BC TC BC": GO TO 750

 749 LET a$(f,10,106 TO 113)="TC
BC TC"
 750 NEXT f
 751 FOR f=1 TO 5: LET a$(f,3+f,
10 TO 11)="MN": NEXT f
 752 FOR f=6 TO 8: LET a$(f,13-f
,10 TO 11)="MN": NEXT f
```

continued from page 33

```
 753  FOR f=26 TO 33: LET a$(f-2
5,4,f)="J": FOR n=5 TO 10: LET a
$(f-25,n,f)="E": NEXT n: NEXT f

 758 FOR f=1 TO 4: LET a$(f,6+f,
75+f TO 76+f)="KL": NEXT f
 759 FOR f=1 TO 4: LET a$(f+4,11
-f,79+f TO 80+f)="KL": NEXT f
 760 FOR f=1 TO 4: LET a$(f,6+f,
85 TO 86)="MN": LET a$(f,10,94-f
 TO 95-f)="AA": NEXT f
 761 FOR f=1 TO 4: LET a$(f+4,11
-f,85 TO 86)="MN": LET a$(f+4,10
,89+f TO 90+f)="AA": NEXT f
 762 RESTORE 764: FOR f=1 TO 8:
READ m: LET a$(f,6+m,34-f TO 35-
f)="KL": NEXT f
 764 DATA 0,1,2,3,2,3,2,1
 765 FOR f=1 TO 5: LET a$(f,5+f,
51 TO 55)="O O O": FOR n=6 TO f+
5
 766 IF n<5+f THEN  LET a$(f,n,5
1 TO 55)="P P P"
 767 NEXT n: NEXT f
 768 FOR f=1 TO 3: LET a$(f+5,10
-f,51 TO 55)="O O O": FOR n=6 TO
 9-f: LET a$(f+5,n,51 TO 55)="P
P P": NEXT n: NEXT f
 769 LET ht=400
 770 REM UDG's
 771 RESTORE 780: FOR n=65200 TO
 65535: READ a
 772 POKE n,a: NEXT n
 780 DATA 255,255,85,170,85,255,
255,0,0,0,224,161,255,170,85,255
,0,56,124,228,214,254,255,255,25
5,103,118,52,96,64,0,0,48,24,12,
24,48,24,12,24
 781 DATA 0,56,124,254,0,124,100
,110,124,230,206,222,124,253,203
,102,0,28,62,127,0,62,38,118,62,
103,115,123,62,191,211,102,60,10
2,78,94,94,126,60,24
 782 DATA 4,4,14,27,57,111,194,1
28,32,32,112,216,156,246,67,1,22
4,175,191,141,63,102,76,8,7,245,
253,177,252,102,50,16,56,56,56,5
6,254,124,56,16
 783 DATA 56,56,56,56,56,56,56,5
6,0,16,40,84,170,68,130,68,51,20
4,51,204,51,204,51,204,0,16,0,56
,108,198,108,56,224,160,248,175,
10,0,85,255,28,55,61,1,31,112,19
2,252
 784 DATA 255,255,85,170,85,255,
255,0,0,0,224,161,255,170,85,255
,0,56,100,196,214,214,255,255,25
5,103,118,52,96,64,0,0,12,24,48,
24,12,24,48,24
 785 DATA 0,56,124,254,0,124,100
,110,124,222,206,230,124,189,223
,102,0,28,62,127,0,62,38,118,62,
123,115,103,62,189,251,102,60,10
2,207,159,191,255,126,24
 786 DATA 196,68,110,57,27,15,2,
0,35,34,118,156,216,240,64,0,15,
57,105,207,154,178,166,36,240,15
6,150,243,89,77,101,36,56,56,56,
56,254,124,56,16
 787 DATA 56,56,56,56,56,56,56,5
6,0,0,16,40,84,40,68,40,15,240,1
5,240,15,240,15,240,16,40,16,56,
108,198,108,56,224,160,248,175,1
0,0,85,255,3,119,221,241,7,12,25
,31
 790 RETURN
 801 LET li=li-1
 802 BEEP 1.1,-25: BEEP .20,-20:
 BEEP .34,-18: BEEP .18,-19
 803 FOR n=1 TO 4
 805 BEEP .1,-16: BEEP .1,-14: N
EXT n
 806 BEEP .1,-16
 807 LET x=lx: LET y=ly
 808 IF li=0 THEN  GO TO 900
 809 FOR n=1 TO li: PRINT  AT 18
,8+n; INK n+1; PAPER 0;"H"; AT 1
9,8+n; INK n+1; PAPER 0;"I": NEX
T n: PRINT  AT 18,8+n; PAPER 0;"
 "; AT 19,8+n;" ": GO TO 1
 900 PRINT  AT 18,9; PAPER 0;" "
; AT 19,9;" "
 901 PRINT  AT 5,25; INK 7; PAPE
R 0;(t AND t<10000)
 902 FOR n=1 TO 500: NEXT n
 905 GO TO 8
 950 FOR n=1 TO 100: NEXT n
 952 BEEP .6,1
 954 BEEP .2,.95: BEEP .2,.8: BE
EP .2,.85
 955 FOR n=1 TO 2
 956 BEEP .11,1.29: BEEP .11,1.2
2: BEEP .29,1.25
 957 NEXT n
 958 BEEP .18,3.5: BEEP .23,6
 959 PRINT  AT 5,25; INK 7; PAPE
R 0; FLASH 1;(t AND t<10000)
 960 IF t<ht THEN  LET ht=t
 961 FOR n=1 TO 500: NEXT n
 965 GO TO 8
```



Poor Alf!

Poor Alf is trapped in a hellish series of rooms. In each room lurks a deadly demon. To escape from one room to the next, Alf must collect 25 of the 29 objects scattered around the room. If he can collect the 25 objects in one room without touching the demon or the parameter fence, he moves on to the next room, where the demon moves slightly faster.

Written for the Spectrum by D Collard of Bury, Lancashire.

Some letters in this listing have been underlined to show that they are to be entered in graphics mode.

```
  6 GO SUB 400
  7 DEF FN R()=.2+(.1*sc AND sc
<6): LET SCORE=0: LET SC=0
  20 POKE 23693,6: POKE 23624,5

  30 CLS : PRINT  AT 10,10;"GET
READY!!!!";:
  40 FOR T=-40 TO 40 STEP 5: BEE
P .01,T: BEEP .01,T+10: BEEP .01
,T+20: NEXT T
  60 CLS : PRINT  AT 21,31;"©";
AT 0,31;"©"; AT 21,0;"©"; AT 0,0
;"©": PLOT 7,7: DRAW  INK 7;0,16
1: DRAW  INK 7;241,0: DRAW  INK
7;0,-161: DRAW  INK 7;-241,0
  70 POKE 23560,55: LET A=10: LE
T S=10: LET D=1: LET F=1: LET Z=
10: LET X=10: LET V=1: LET B=1

  80 LET score=score+1: LET sc=s
c+1: LET A=10: LET S=10: FOR P=1
 TO 28: PRINT  INK 4; AT ( RND *
19)+1,( RND *29)+1;"!";: NEXT P

  90 GO TO 300
  100 PRINT  AT S,A; INK 3;"A";

  110 PRINT  AT X,Z;" ";
  120 LET Z=A: LET X=S
  130 IF  RND < FN R() THEN  GO S
UB 0210
  140 LET A$= CHR$ ( PEEK 23560)

  150 LET S=S+(A$="6" AND S<21)-(
A$="7" AND S>0)
  160 LET A=A+(A$="8" AND A<31)-(
A$="5" AND A>0)
  170 IF SCORE <> 0 AND (SCORE/25
)= INT (SCORE/25) THEN  GO SUB 6
00: LET score=score+50: GO TO 00
40
  180 IF  SCREEN$ (s,a)="!" THEN
 LET SCORE=SCORE+1: BEEP .01,50:
 GO TO 300
  190 IF  ATTR (S,A) <> 7 THEN  G
O TO 0100
```

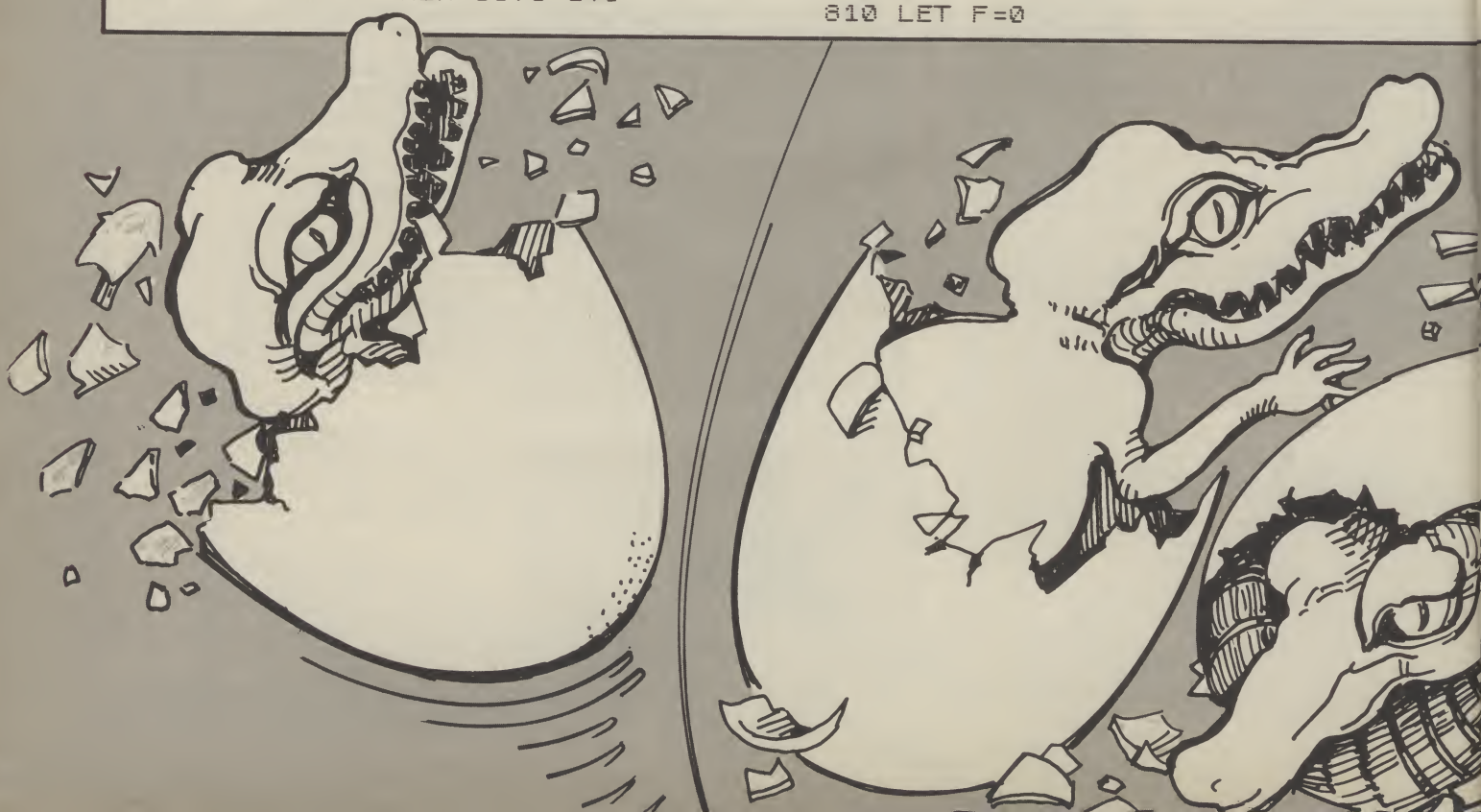
```
200 BEEP .1,40: GO TO 0290
210 LET D=D+(D<A)-(D>A)
230 LET F=F+(F<S)-(F>S)
240 PRINT  AT F,D; PAPER 8; INK
2; OVER 1;"B";
250 PRINT  AT V,B; INK 4; PAPER
0; OVER 1;"B";
255 PRINT  AT 1,1; FLASH 8; INK
8; PAPER 8;" "
270 LET V=F: LET B=D: IF D=A AN
D F=S THEN  GO TO 0290
 280 RETURN
 290 GO SUB 600: PRINT  AT 11,11
;"BAD LUCK";: PAUSE 1E2: GO TO 5
00
 300 PRINT #1; AT 0,0; INK 4;"SC
ORE:= ";SCORE; AT 0,15; INK 4;"S
CREEN= ";SC;: PRINT  AT s,a; INK
 5;" ": GO TO 190
 400 DATA "a",65,93,127,42,54,20
,42,73
 410 DATA "b",126,219,231,255,12
9,90,90,60
 430 FOR t=1 TO 2: READ a$: FOR
r=1 TO 8: READ u: POKE  USR a$+r
,u: NEXT r: NEXT t
 435 DATA 33,0,88,17,1,88,54,5,1
,255,2,237,176,201,0,33,0,64,85,
62,192,6,31,35,94,43,115,35,16,2
49,114,35,61,32,242,201: FOR m=1
 TO 36: READ c: POKE 27500+m,c:
NEXT m
 440 RETURN
 500 BEEP .1,1: BEEP .1,50: BEEP
.1,-10: PRINT  AT 11,10;"score
is "; INK 5;score
 505 INPUT "another game ? "; LI
NE a$: IF a$="n" OR a$="N" THEN
 STOP
 510 RUN
 600 FOR c=0 TO 50 STEP 1: POKE
27508,c: RANDOMIZE  USR 27500: N
EXT c: FOR a=1 TO 32: RANDOMIZE
 USR 27515: NEXT a: RETURN
9999 PLOT 7,7: DRAW 0,161: DRAW
241,0: DRAW 0,-161: DRAW -241,0:
 PAPER 0
```

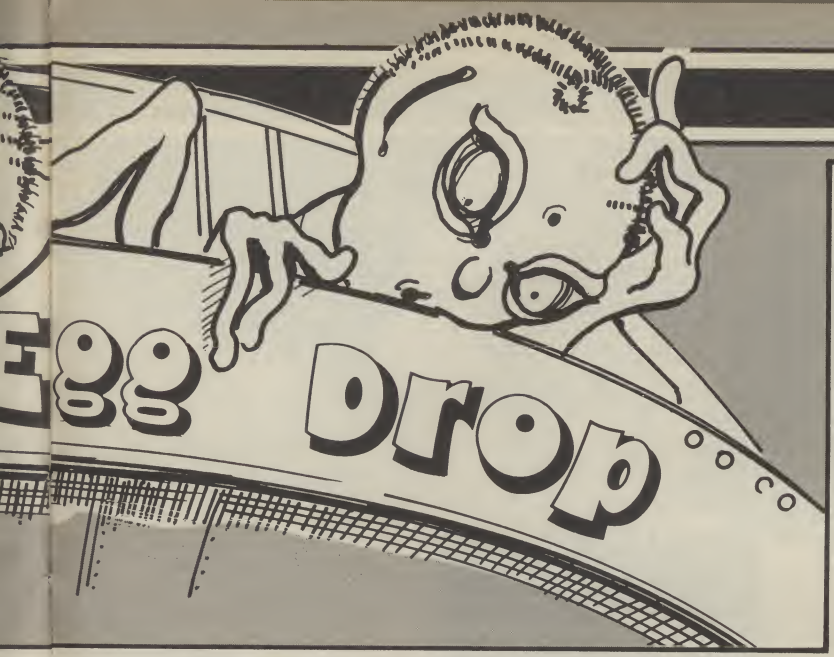
Alien E

The Martians intend to colonise the earth by dropping eggs which they think will hatch to produce little green crocodiles. What they have forgotten, of course, is that the earth is hard, and that the eggs will crack if they hit the ground. Try to catch the eggs before they smash.

Alien egg drop was written for the 16K ZX-81 by D Potter of Axminster, Devon.

```
   5 GOTO 9100
  10 REM INITIALISE
  15 LET 0=0
  20 LET N=0
  25 LET Y=0
  30 LET X=1
  35 LET D=3
  40 LET H=0
  45 LET A=20
  50 LET V=0
  55 DIM V$(32)
  60 LET W=0
  65 LET X=1+3*0*(INT (RND*9))
  70 GOSUB 250
  75 REM RESUME
  80 POKE 16418,0
  85 IF 0 THEN GOTO 1100
  90 LET X$="S S S S S S S S S S
 S S S "
  99 REM DRIBBLE
 100 PRINT AT V,W;V$;V$;AT Y,X;"
▟▙
"" """"
 110 LET V=Y
 120 LET W=X
 130 IF RND<M THEN GOTO 500
 140 LET X=X+D
 150 LET Y=Y-((Y<>0) AND (RND>K)
)+((Y<=G) AND (RND<K))
 160 IF RND<L OR X>27 OR X<2 THE
N LET D=-D
 170 IF RND<P THEN GOTO 140
 180 GOTO 100
 249 REM LEVEL
 250 LET G=5+(H>10)*(9+J*NOT 0)
 260 LET K=.3+.006*H
 270 LET L=(H>20)*.3
 280 LET P=(H-40)*.02
 290 LET M=.1+H*.004
 300 RETURN
 499 REM DROP
 500 LET F=1
 510 LET U=X+1
 520 PRINT AT Y+2,U;"*"
 530 FOR I=Y+2 TO 21
 540 PRINT AT I,U;" ";TAB U;"*"
 550 IF INKEY$="" THEN NEXT I
 560 LET A$=INKEY$
 570 PRINT AT 20,A+1;" ";TAB A+1
;" "
 580 GOTO 800
 599 REM FINISH
 600 FOR I=I TO 21
 610 IF I<20 THEN PRINT AT 20,A+
1;X$(I);TAB A+1;X$(I+1)
 620 PRINT AT I,U;" ";TAB U;"*"
 630 IF J=1 AND 0 THEN GOTO 550
 640 NEXT I
 650 PRINT AT 20,A+1;" ";TAB A+1
;" "
 660 GOTO 1000
 799 REM FEED
 800 IF A$<"0" OR A$>"9" THEN GO
TO 640
 810 LET F=0
```






```
 820 IF A$="0" THEN LET A$="10"
 830 LET A=3*VAL A$-2
 840 IF X=A THEN PRINT AT I-1,U-
1;"???"
 850 RAND
 860 PRINT AT 21,0;V$;V$;V$
 870 PRINT AT 21,A;"▟ ▙";AT 22,A
;"▙▄▟";AT 23,A;"0▀0"
 880 PRINT AT I-1,U-1;"   "
 890 GOTO 600
 999 REM ■AND
1000 IF X<>A THEN GOTO 1200
1010 IF F THEN GOTO 1700
1020 PRINT AT 20,A;"""""""";TAB
A+1;""""
1030 LET H=H+1-(H>=50)
1040 LET N=N+1
1050 PRINT AT 0,16*(X<16);"SCORE
: ";N
1060 GOSUB 250
1070 PRINT AT 20,A;"   ";TAB A;"
▀▀▀"
1080 PRINT AT 0,16*(X<16);V$( TO
 16)
1090 IF NOT 0 THEN GOTO 140
1099 REM HELP
1100 PRINT AT 21,0;V$;"  1  2  3
  4  5  6  7  8  9  0  ";V$
1110 GOTO 140
1199 REM MESS
1200 PRINT AT 21,0;V$;V$;V$
1210 PRINT AT 23,X+1;"""";AT 22,
X;""" """;AT 21,X-1;""" "" """
```

```
1220 GOSUB 1500
1230 PRINT AT 23,X;"( )";AT 22,X
;". .";AT 21,X-1;"   "
1240 PRINT AT 21,0;V$;V$;AT 23,X
-1;"(   )"
1250 PRINT AT 23,X-1;"     "
1260 CLS
1270 PRINT AT 5,8;"OOPS, MISSED.
";AT 8,0;"SCORE: ";N
1280 IF 0 THEN PRINT "(PRACTICE
ONLY)"
1299 REM SCORE
1300 PRINT AT 11,0;"RATING: ";
1310 IF NOT 0 THEN LET N=INT (N*
(J+1)/4)
1320 LET A$="USELESS"
1330 IF N>10 THEN LET A$="ROTTEN
"
1340 IF N>20 THEN LET A$="ORDINA
RY"
1350 IF N>30 THEN LET A$="FAIR"
1360 IF N>40 THEN LET A$="GOOD"
1370 IF N>60 THEN LET A$="EXCELL
ENT"
1380 IF N>100 THEN LET A$="ACE"
1390 PRINT A$
1400 LET B=80
1410 GOSUB 1510
1420 CLS
1430 LET 0=(N<5)
1440 GOTO 20
1499 REM TICK
1500 LET B=10
1510 FOR I=1 TO B
1520 NEXT I
1530 RETURN
1699 REM SPLAT
1700 PRINT AT 20,A;"""""""";TAB
A;"▄▄▄"
1710 GOSUB 1500
1720 GOTO 1200
8990 REM SAVE
9000 CLEAR
9010 SAVE "E"
9020 GOTO 9100
9030 PRINT ,,"-WHAT LEVEL OF PLA
Y? (1 TO 5)"
9040 POKE 16418,2
9050 INPUT A$
9060 IF A$<"1" OR A$>"5" THEN GO
TO 9050
9070 LET J=VAL A$
9080 CLS
9090 GOTO 15
9099 REM START
9100 CLS
9110 PRINT AT 10,7;"ALIEN EGG DR
OP"
9120 LET B=25
9130 GOSUB 1500
9140 CLS
9149 REM INSTRUCTIONS
9150 PRINT "THE MARTIANS ARE COM
ING /"
9160 PRINT ,,"THE MARTIANS WANT
TO COLONISE   EARTH BY DROPPING
MARTIAN EGGS  WHICH THEY THINK W
ILL HATCH OUT TO BECOME LITTLE G
REEN CROCODILES"
9170 PRINT "BUT THEY HAVE FORGOT
TEN THAT OURPLANET IS HARD AND E
GGS WILL    BREAK.   MEANWHILE R
ONNY RAY-GUNHAS FOUND THAT THE E
GGS MAKE    GOOD LASER-BEAM LENS
ES.",
9180 PRINT ,,"YOU MUST CATCH AS
MANY AS       POSSIBLE.   WHEN Y
OU DROP ONE   THE ALIENS SEE IT
BREAK, REALISETHEIR MISTAKE AND
GO HOME."
9190 PRINT ,,"-HIT A NUMBER (1 T
O 0) TO CATCH"
9200 GOTO 9030
```

CHECKA PUZZLE

If you thought Rubik's cube was difficult, you are going to be completely bemused by Checka Puzzle. On screen appears a mixed up chequer board grid. By moving horizontal and vertical strips around the board, how quickly can you return the board back to its original arrangement? We gave up in the *Sinclair Programs* office after sixty moves.

Written for the 16K ZX-81 by Robert Street of Belper, Derbyshire.

```
1 SAVE "CHECKA-PUZZLE"
2 GOTO 850
10 CLS
20 FAST
30 DIM A$(7,7)
40 FOR F=1 TO 25
50 LET A=INT (RND*7)+1
60 LET B=INT (RND*7)+1
70 IF A$(A,B)="▒" THEN GOTO 30
75 LET A$(A,B)="▒"
77 NEXT F
80 SLOW
90 LET M=0
100 PRINT AT 7,12;"▄▄▄▄▄▄▄▄"
110 FOR F=8 TO 14
120 PRINT AT F,12;"▌      ▐"
130 NEXT F
140 PRINT AT F,12;"▀▀▀▀▀▀▀▀"
150 FOR F=1 TO 7
160 PRINT TAB 12;" ";A$(F)
170 NEXT F
180 PRINT AT 15,0;"DO YOU WISH TO MOVE A VERTICAL (U/H)" OR A HORIZONTAL STRIP ? (U/H)"
185 PRINT AT 18,0;"OR PRESS ""C"" TO CLAIM"
190 LET U$=INKEY$
195 IF U$="U" OR U$="H" THEN GOTO 200
196 IF U$="C" THEN GOTO 700
197 GOTO 170
200 PRINT AT 16,0;"
205 PRINT AT 18,0;"
210 IF U$="U" THEN PRINT AT 16,0;"UP OR DOWN ? (U/D)"
220 IF U$="H" THEN PRINT AT 16,0;"LEFT OR RIGHT ? (L/R)"
230 LET K$=INKEY$
240 IF U$="U" AND (K$="U" OR K$="D") THEN GOTO 300
250 IF U$="H" AND (K$="L" OR K$="R") THEN GOTO 500
260 GOTO 230
300 PRINT AT 16,0;"WHICH STRIP ?  "
310 LET L$=INKEY$
315 IF L$<"0" AND L$<"8" THEN GOTO 325
320 GOTO 310
325 IF K$="U" THEN GOTO 340
330 IF K$="D" THEN GOTO 360
340 LET L=VAL L$
345 LET L$=A$(2,L)+A$(3,L)+A$(4,L)+A$(5,L)+A$(6,L)+A$(7,L)+A$(1,L)
350 GOTO 400
360 LET L=VAL L$
380 LET L$=A$(7,L)+A$(1,L)+A$(2,L)+A$(3,L)+A$(4,L)+A$(5,L)+A$(6,L)
400 FOR F=1 TO 7
410 LET A$(F,L)=L$(F)
420 IF K$="D" THEN PRINT AT F+7,L+12;"▒"
425 IF K$="U" THEN PRINT AT 15-F,L+12;"▒"
430 NEXT F
440 GOTO 130
500 PRINT AT 16,0;"WHICH STRIP ?  "
510 LET L$=INKEY$
520 IF L$<"0" AND L$<"8" THEN GOTO 540
530 GOTO 510
540 LET L=VAL L$
550 IF K$="R" THEN LET L$=A$(L,7)+A$(L,1 TO 6)
560 IF K$="L" THEN LET L$=A$(L,2 TO 7)+A$(L,1)
570 LET A$(L)=L$
580 FOR F=1 TO 7
590 IF K$="R" THEN PRINT AT L+7,F+12;"▒"
600 IF K$="L" THEN PRINT AT L+7,20-F;"▒"
610 NEXT F
615 LET M=M+1
620 GOTO 130
700 LET K$="▒▒▒▒▒▒▒▒"
710 LET L$=A$(1) AND A$(2) AND A$(3)=K$ AND A$(4)=K$ AND A$(5)=K$ AND A$(6)=K$ AND A$(7)=K$ AND A$(8)=L$
720 IF A$=K$ AND A$=L$ THEN GOTO 750
730 PRINT AT 16,0;"YOU FINISHED IN ";M;" MOVES";0,0;"ANOTHER GO ?"
740 GOTO 130
750 PRINT AT 770,0;"ANOTHER GO ?"
760 IF INKEY$="Y" THEN RUN
770 IF INKEY$="L" THEN RUN 2
780 IF INKEY$="S" THEN LOAD ""
790 IF INKEY$="N" THEN STOP
800 GOTO 770
810 PRINT "
820 PRINT "INSTRUCTIONS ? ▒"
830 LET U$=INKEY$
840 IF U$<>"Y" AND U$<>"N" THEN GOTO 830
850 PRINT AT 3,15;U$;"▒"
860 GOTO 900+(INKEY$=CHR$ 118)
870 PRINT AT 3,16;"
880 IF U$="N" THEN GOTO 3
890 PRINT AT 3,16;"TRY TO TURN THE JUMBLED UP BOARD INTO THIS PATTERN:"
900 FOR F=7 TO 11 STEP 2
910 PRINT AT F,19;"▒▒▒▒"
920 NEXT F
930 PRINT AT 13,19;"▒▒▒▒"
940 PRINT
950 PRINT "PRESS (N/L)"
960 PRINT AT 13,19;"IN AS FEW MOVES AS POSSIBLE"
970 PRINT
980 GOTO 980+(INKEY$=CHR$ 118)
990 GOTO 3
1000 GOTO 3
```

Programming — Slow and easy with Computer Sloth

BINARY

VARIABLES

A variable is a name given to a location in memory used to store a number. The value of a variable may change as the program is run, so the Spectrum changes the contents of memory locations to suit. There are just a few variables used in Binary: a description of each will help you to understand how it works:

n is the decimal to be converted to binary, though this is changed by the program as you will see.

col is the column number at which the program has to print the current binary digit.

a$ is a string variable, so called because it can hold a string of characters (still interpreted as numbers as far as the computer is concerned). In this program, it is used simply to hold the user's yes or no reply for another number.

HOW IT WORKS

The binary form for a decimal number is found by adding 1+2+4+8+16+32.....2↑n. This is the same as saying 2↑0 + 2↑1 + 2↑2 + 2↑3 + 2↑4 + 2↑5.....2↑n. (n in this case is the number of times we need to continue to keep multiplying by 2 to get the decimal we want to convert, NOT the decimal itself). For example, the decimal number nine would be 2↑0(=1)+2↑3(=8) and so the binary form is 1001. The conversion using a program is quite simple once you understand this principle as it is just a matter of continually dividing the number by 2 and checking to see if there is any remainder, in which case we put a one (otherwise zero). Take the number nine again. The first time we divide by two we get a remainder so we write down a 1 at the right hand side. Ignoring this remainder, we take the whole number of times we were able to divide by 2 (i.e. 4) and repeat the process. This time, we get 2 with no remainder, so we write down 0. Next time we divide we get 1, again with no remainder, so we write down another 0. Finally, we get zero (which means we can go no further) but this time with a remainder, so the last number we write down is 1. Before trying to understand the program, make sure you understand how to do the conversion with pencil and paper on a few other numbers.

Lines

10 Sets screen colours and clears.

12-13 Print title etc.

20 Prompts for decimal number n to be converted. Note how POKE 23617,158 (system variable for cursor mode) can be used to obtain a flashing black square.

25 Sets up for printing at right hand side of screen to start.

30 Confirms the number to be converted. Note how INT is used to make sure that the user realises that the program will only convert the integer part of the decimal number.

45-60 This is the loop which simulates the process we have just looked at. Line 45 can only print 1 or 0 (for remainder or no remainder). Line 50 resets n to the number of whole divisions by 2 and moves "col" to print in the next character position to the left (on row 15). Line 52 is the means by which the program escapes from the loop when there is nothing left to divide further.

200-215 Find out whether another number is to be entered.

9999 Saves and verifies "Binary" on cassette for you to use any time you need perform binary conversion.

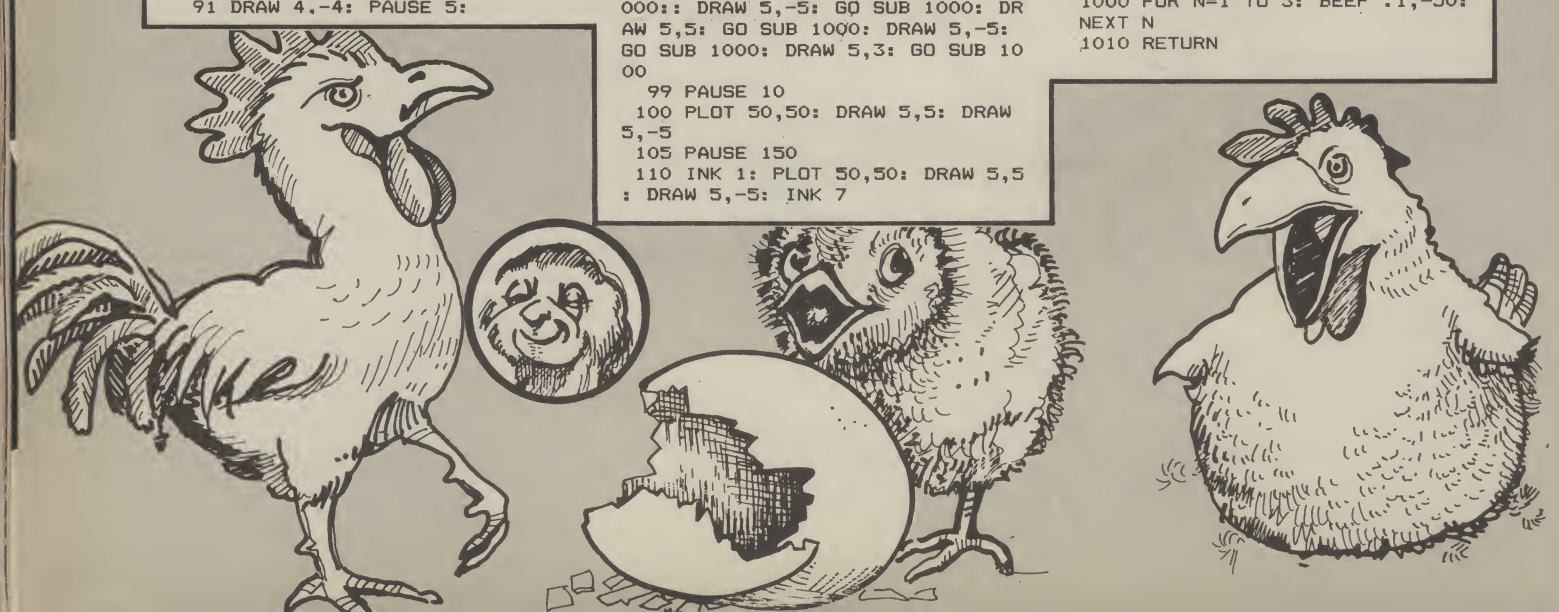
```
 10 BORDER 0: PAPER 0: INK 7: C
LS
 12 PRINT  AT 0,10; FLASH 1; PA
PER 6; INK 2;"  B I N A R Y  "

 13 PRINT  AT 3,4; PAPER 7; INK
 1; FLASH 1;"  @1984 Ramses Valv
ekens"
 20 POKE 23617,158: INPUT "Give
 DECIMAL number...";n
 25 LET col=31
 30 PRINT  AT 12,0; BRIGHT 1;"T
he binary number for"' INT n;" i
s:"
 45 PRINT  AT 15,col;(n-2* INT
(n/2)) <> 0
 50 LET col=col-1: LET n= INT (
n/2)
 52 IF n=0 THEN  GO TO 200
 60 GO TO 45
 200 INPUT "Another number? "; L
INE a$
 205 IF a$="y" OR a$="Y" THEN  R
UN
 210 IF a$="n" OR a$="N" THEN  G
O TO 220
 215 GO TO 200
 220 CLS : PRINT  AT 12,1; BRIGH
T 1;"THANKS FOR USING 'BINARY'!!
!"
 230 BEEP .2,0: BEEP .2,3: STOP

 235 GO TO 230
9999 SAVE "Binary" LINE 10: BEEP
 .2,0: VERIFY "Binary": BEEP .2,
0
```

Easter Greeting

This simple program will allow you to display an animated Easter Greeting on screen for relatives and friends. Watch as the egg cracks open, and as the chicken breaks out and starts to cheep.

Written for the Spectrum by A Pye of Chalfont St Peter, Buckinghamshire.

```
 10 BORDER 1: PAPER 1: INK 5: C
LS
 20 PLOT 50,50
 30 DRAW -20,-30,1
 40 DRAW 20,-10,1
 50 DRAW 20,30,1
 60 DRAW -20,10,1
 70 PAUSE 100
 80 PLOT 50,30
 90 DRAW 4,4
 91 DRAW 4,-4: PAUSE 5:
 92 DRAW 4,4: GO SUB 1000: DRAW
 4,-4: GO SUB 1000
 93 PLOT 50,30: GO SUB 1000
 94 DRAW -4,4: GO SUB 1000: DRA
W -4,-4: GO SUB 1000: DRAW -4,4:
 GO SUB 1000
 95 DRAW -4,-4
 96 PAUSE 100
 97 INK 6
 98 INK 7: PLOT 45,47: GO SUB 1
000:: DRAW 5,-5: GO SUB 1000: DR
AW 5,5: GO SUB 1000: DRAW 5,-5:
GO SUB 1000: DRAW 5,3: GO SUB 10
00
 99 PAUSE 10
 100 PLOT 50,50: DRAW 5,5: DRAW
5,-5
 105 PAUSE 150
 110 INK 1: PLOT 50,50: DRAW 5,5
: DRAW 5,-5: INK 7
 115 PAUSE 10
 120 FOR n=14 TO 16: PRINT  INK
1; AT n,0;"                "
 130 NEXT n
 135 PLOT 54,40: DRAW -5,10,4
 140 DRAW -5,-3: DRAW 5,-3: DRAW
 5,-3,1
 145 PLOT 52,48
 160 PLOT 50,50
 170 PLOT 37,40: DRAW 10,3
 180 PLOT 55,40: DRAW 4,-10
 182 FOR N=1 TO 5: BEEP .1,60: P
AUSE 5: NEXT N: FOR N=1 TO 5: FO
R N=1 TO 5: BEEP .1,60: PAUSE 5:
 BEEP .1,65:  PAUSE 5: NEXT N
 190 PRINT  AT 0,9; INK 7; FLASH
 1;"HAPPY EASTER"
 900 STOP
1000 FOR N=1 TO 3: BEEP .1,-50:
NEXT N
1010 RETURN
```

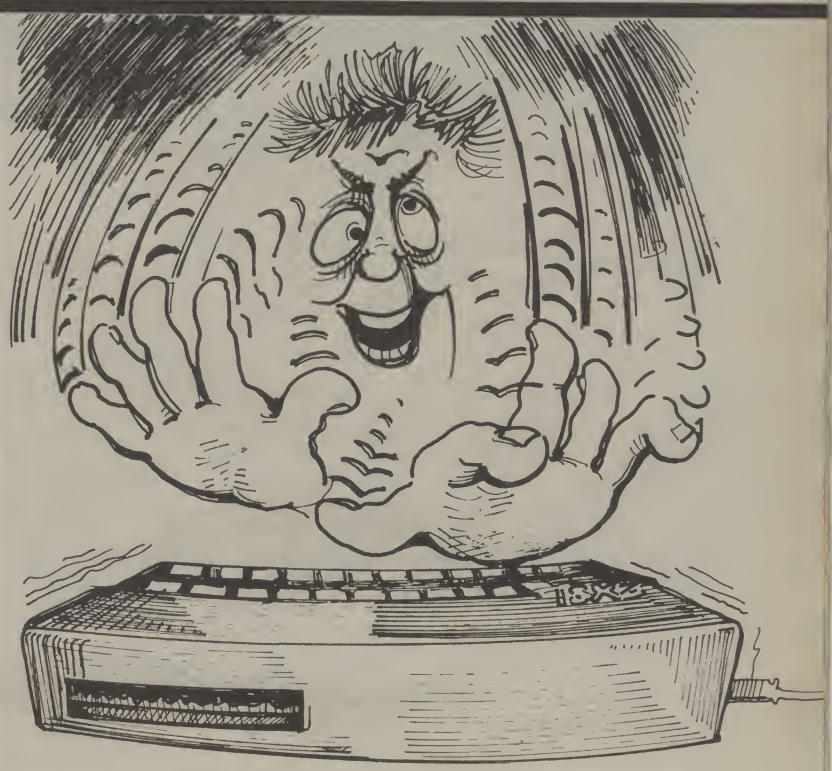


DIY music

Use your Spectrum as a simple keyboard with DIY Music. Keys q,w,3,e,r,s,t,y and u can each be used to produce a note when this program is run. Simple, one octave tunes can be produced, or the program can be modified to extend its range.

```
  10 PRINT "D I Y MUSIC"
  20 PAUSE 0
  30 IF  INKEY$ ="q" THEN  BEEP
.1,1
  40 IF  INKEY$ ="w" THEN  BEEP
.1,3
  50 IF  INKEY$ ="3" THEN  BEEP
.1,5
  60 IF  INKEY$ ="e" THEN  BEEP
.1,7
  70 IF  INKEY$ ="r" THEN  BEEP
.1,9
  80 IF  INKEY$ ="5" THEN  BEEP
.1,11
  90 IF  INKEY$ ="t" THEN  BEEP
.1,13
 100 IF  INKEY$ ="y" THEN  BEEP
.1,15
 110 IF  INKEY$ ="u" THEN  BEEP
.1,17
 120 GO TO 20
```

```
   3 CLS
   4 GOTO 160
   5 LET S=0
  10 LET R=INT (38+RND*25)
  30 PRINT AT 10,X;CHR$ R
  40 LET A$=INKEY$
  50 IF A$=CHR$ R THEN GOTO 100
  60 LET X=X-1
  70 IF X=0 THEN GOTO 130
  80 GOTO 30
 100 LET S=S+1
 105 CLS
 109 PRINT AT 0,0;"SCORE=";S
 110 IF Y$="1" THEN LET X=12
 111 IF Y$="2" THEN LET X=25
 120 GOTO 10
 130 CLS
 140 PRINT "SCORE=";S
 150 FOR Q=1 TO 150
 151 NEXT Q
 152 CLS
 160 PRINT AT 0,10;"LETTER KRAZY
"
 170 PRINT AT 4,0;"SELECT DIFFIC
ULTY LEVEL"
 180 PRINT "1 OR 2"
 200 INPUT Y$
 210 IF Y$="1" THEN LET X=12
 220 IF Y$="2" THEN LET X=25
 221 CLS
 222 GOTO 5
```



Letter Crazy

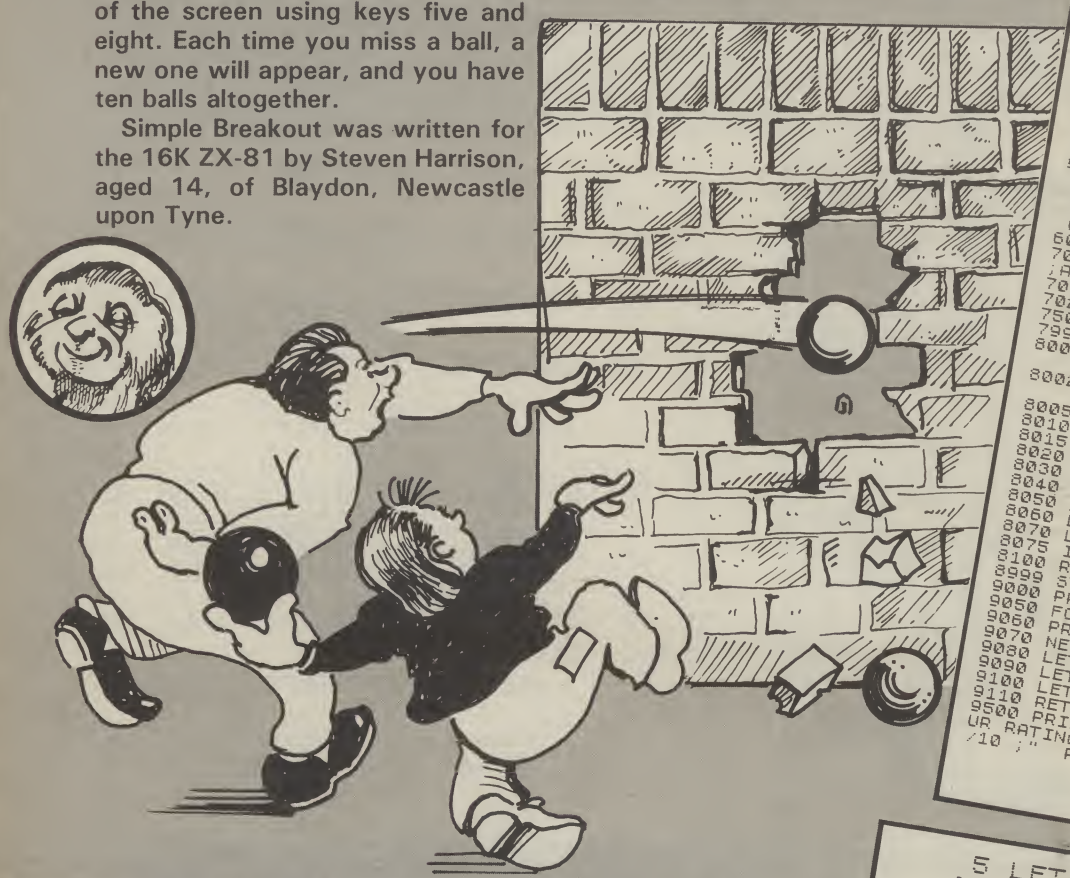
Letter krazy tests the skills of those learning to type, or trying to get acquainted with the ZX-81 keyboard. A letter will appear on the right of the screen and move quickly towards the left of the screen. Press the corresponding key on the keyboard to score a point.

Written for the 1K ZX-81 by J Parkins of Borehamwood, Hertfordshire.

Simple Breakout

A wall of grey bricks appears at the top of the screen. This can be broken down using a bouncing ball. You move a bat at the bottom of the screen using keys five and eight. Each time you miss a ball, a new one will appear, and you have ten balls altogether.

Simple Breakout was written for the 16K ZX-81 by Steven Harrison, aged 14, of Blaydon, Newcastle upon Tyne.



```
 10 GOSUB 9000
 20 GOSUB 8000
 30 IF PEEK (33+Y+X+1+PEEK 1639
6+256*PEEK 16397)=R THEN GOSUB 7
000
 50 PRINT AT Y,X;A$
 60 PRINT AT Y,X;" "
 510 PRINT AT 20,M-1;"    "
 530 IF Y=1 OR (Y=19 AND ABS (M-
X)<3) THEN LET Q=-Q
 540 IF X=2 OR X=30 THEN LET W=-
W
 545 LET M=M+(INKEY$="8")-(INKEY
$="5")
 550 IF Y=20 THEN GOSUB 8000
 600 LET Y=Y+Q
 610 LET X=X+W
 615 LET S=S+1
 6000 GOTO 30
 7000 PRINT AT Y,X;" ";AT Y,X;"*"
;AT Y,X;"■";AT Y,X;"*"
 7010 IF Y<>1 THEN LET Q=-Q
 7020 LET S=S+67
 7500 RETURN
 7999 STOP
 8000 PRINT AT 19,0;"
 8002 PRINT AT 20,0;"
 8005 LET A=A+1
 8010 PRINT AT 0,7;S
 8015 IF A=156 THEN GOTO 9500
 8020 LET A$=CHR$ (A)
 8030 LET Y=18
 8040 LET X=INT (RND*26+4)
 8050 LET M=2
 8060 LET Q=-1
 8070 LET W=1
 8075 IF RND>.5 THEN LET W=-1
 8100 RETURN
 8999 STOP
 9000 PRINT "SCORE: "
 9050 FOR J=1 TO 128
 9060 PRINT "■";
 9070 NEXT J
 9080 LET A=156
 9090 LET S=0
 9100 LET R=136
 9110 RETURN
 9500 PRINT AT 10,2;"GAME OVER YO
UR RATING IS ";INT (S*1000/3618)
/10 ;"%"
      PERCENT"
```

Biorhythms are recurring cycles of physical, emotional or intellectual activity which are said to occur in people's lives. Use this program, written for the 16K ZX-81 by A West of Dolphinholme, Lancaster to chart your biorhythms and see if you believe the theory holds true for you. Input the day, month and year of your birth, followed by the month and year for which you would like your rhythms charted.

```
  5 LET A$="  :  :  "
 10 PRINT AT 0,0;"NAME";
 20 INPUT N$
 30 PRINT TAB 16;N$;AT 2,0;"INP
UT: A-E";AT 4,0;"DATE OF BIRTH";
A ;  B  ;  C";AT 6,0;"MONTH + YEAR"
"D  :  E"
 40 INPUT A
 60 INPUT B
 80 INPUT C
 110 INPUT D
 120 INPUT E
 130 PRINT AT 4,16;A;A$;B;A$;C;A
T 6,16;D;A$;E
 140 PRINT AT 19,1;"PHYSICAL,MEN
TAL OR EMOTIONAL?"
 150 LET T=INT (((E-C)*365.25)+(
D-B)*30.35)-A
 160 IF INKEY$<>"P" AND INKEY$<>
"M" AND INKEY$<>"E" THEN GOTO 16
0
 170 IF INKEY$="P" THEN LET X=23
 180 IF INKEY$="E" THEN LET X=28
 190 IF INKEY$="M" THEN LET X=33
 200 CLS
 210 PRINT " EMOTIONAL" AND X=28
;" MENTAL  " AND X=23;" PHYSICA
L " AND X=33;" BIORHYTHMS : ";N$
 220 PRINT AT 1,0;"  ";A$;D;A$;E;"  MONTH
";+";AT 11,31;"-";AT 9,31;
 260 PRINT AT 10,0;"----------
----------";AT 21,0;"----------
----------"
 270 LET Z=2*PI*(T-(INT (T/X)*X)
)/X
 280 LET W=2*PI*(33-X)*.03
 290 FOR Q=Z TO Z+W+6.8 STEP .5
 300 PRINT AT 10+SIN Q*7,(Q-Z)*(
7+X)/8.7;"*"
 310 NEXT Q
 320 IF INKEY$="" THEN GOTO 320
 330 GOTO 140
```

CHART

1	Decathlon	Ocean
2	Knight Lore	Ultimate
3	Jet Set Willy	Software Projects
4	Ghostbusters	Activision
5	Lords of Midnight	Beyond
6	Manic Miner	Software Projects
7	Underwurlde	Ultimate
8	Sabre Wulf	Ultimate
9	Matchday	Ocean
10	Pyjamarama	Mikrogen

HEIGHTS ⬆ DEPTHS ⬇

1	Transylvanian Tower	Richard Shepherd
2	3D Tunnel	New Generation
3	Horace Goes Skiing	Psion
4	Great Space Race	Legend
5	Full Throttle	Micromega

To register your votes, let us know the program you like most, and the program you hate most. Add you name and address, which will make you eligible for the £10 chart prize. Send your votes to CHARTLINE, Sinclair Programs, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU.

Winner of this month's chart prize is Alun Davies of Liverpool.

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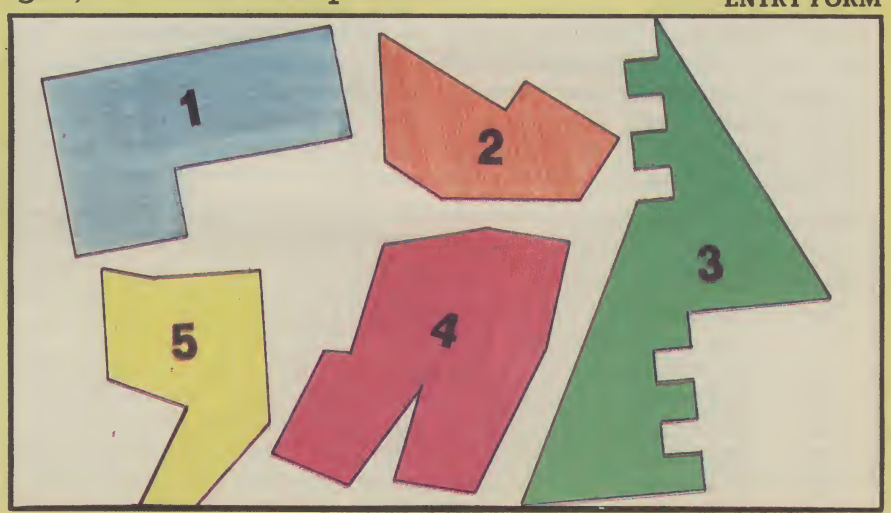
HOW TO ENTER

There are five keys to the Emerald Isle. Unfortunately, due to crystallising problems within the Bermuda triangle, each one has doubled in size. In each case, one line will divide the five shapes below so that the area of each half is equal. Work out exactly where the dividing lines should go, then mark them on the entry form and send it, together with your name and address, to Sinclair Programs, Priory Court, 30-32 Farringdon Lane, London EC1, to arrive on or before April 30th.

ENTRY FORM



Machine code vertical scroll

VERTICAL scrolling is more involved than sideways scrolling because we require a clear understanding of how the Spectrum display file works. To make the learning task easier, the problem is best tackled in two stages. In this first part, you will find out how the display file is set up and how to use a small machine code (m/c) routine to set up the data required for the scroll routines themselves in the next part.

For sideways scrolling, all we had to know about the display file was that it occupies memory locations from 16384-22527 (hex 4000-57FF). The routines we used which rotated the bit patterns of each consecutive byte of the display file may have created the illusion that the computer was also working progressively up and down the screen. You might like to go back to one of the two routines in the last issue and change line 60 to read LD B,96 (instead of LD B,192). This line sets the loop counter for the number of rows to be scrolled. Halving the number of rows does not mean scroll just the top half of the screen, as you will find out.

The Spectrum translates the bits of the display file into dots on the screen, by first dividing the screen into three sections (from top to bottom). Taking each section in turn, (each containing 256 character positions and remembering that each character is made up of eight pixel rows), the computer begins by printing the top pixel row of all 256 characters as shown in fig. 1.

Note that hex notation is used for DF locations. This is because a hex number can be divided into a high and low order byte (explained in last article), and it makes it easier to work out a set of rules governing changes to both parts for a m/c routine which works out column 0 addresses for all pixel rows (these will be pre-computed and stored in a "file" for use by the scroll routines later). These rules are:

1. The start addresses for each section are 4000 H (HOB=40H LOB,00H), 4800 H (HOB=48H, LOB=00H) and 5000 H (HOB=50H,LOB=00).
2. For a group of eight pixel rows (one character row), HOB increases by one for each pixel row.
3. A new character row resets HOB (reduce HOB by eight), except for a change to a new section (when eight character rows have been done).
4. The LOB changes by character row (i.e. it is identical for all pixel rows within a group of eight). Thus, a new character row increments LOB by 20H and resets to zero at start of new section.

The program to set up the file of Column 0 addresses based on these rules is listed as Program 1 (Basic and Assembler). First, the Basic: Line 15 sets RAMTOP to 62999 so that, for a 48K Spectrum, our file can be stored starting at 63000, and the m/c itself at 64000. 16K users can allocate their own memory allowing 384 bytes for the table and 38 bytes for m/c. Lines 30-40 read the m/c into memory. Line 60 executes the code and sets up the file. Lines 65-88 allow you to PEEK the file just created and receive a table of column 0 addresses, either in decimal or hex. It will give you a much better guide to screen locations than any published source. If you type GO TO 90, the m/c will be SAVEd to cassette. You can also save the file by typing : SAVE "addresses" CODE 63000,384.

The flowchart in Figure 2 will help you to understand the assembler listing (encapsulated in line 40 of the Basic). Line 30 loads the start of the display file into the BC register pair and line 40 loads the start of the file we wish to create into HL. Register pairs are obviously necessary because both numbers are two bytes long. There are only three register pairs to choose from when setting up addresses in this way: BC, DE and HL. HL is the favoured register pair and is the best choice for two byte numbers which have to be manipulated the most. The "£" sign in line 30 is the way my assembler/printer combination indicates a hex number i.e. LD BC,4000 H. As I have already said, hex numbers are best for display file addresses, especially as we

Pixel Row	DF locations
0	4000-401F (H)
8	4020-403F
16	4040-405F
24	4060-407F
32	4080-409F
40	40A0-40BF
56	40E0-40FF

The second pixel row is now printed (pixel rows 1,9,17,25, 33,41,49,57) adding 100 H to the display file locations, and so on for all eight rows of the 256 characters. Therefore, for example, the DF locations for pixel row 63 will be 47E0-47FF. The middle and bottom sections are done in the same way.

Program one:

```
  10 REM Progam one-display fil
ddresses (column 0)
  15 CLEAR 62999: LET h$="     "

  20 LET s=0: FOR i=64000 TO 640
37: READ n: POKE i,n: LET s=s+n:
 NEXT i
  30 READ sum: IF s <> sum THEN
 PRINT "error in data entry-rety
pe line 40": STOP
  40 DATA 1,0,64,33,24,246,22,0,
113,35,112,35,4,120,230,7,32,246
,121,198,32,79,20,122,214,24,200
,122,230,7,40,232,120,214,8,71,2
4,226,3628
  50 PRINT "data entry o k "'"no
w runing machine code": PAUSE 10
0: CLS
  60 RANDOMIZE  USR 64000
  65 INPUT "Do you want to inspe
ct a table  of results?";a$: IF
a$="n" THEN  STOP
  66 INPUT "Decimal (d) or Hexad
eciml (h)";a$
  67 IF a$ <> "d" AND a$ <> "h"
THEN  GO TO 66
  70 PRINT "TABLE OF COLUMN 0 AD
DRESSES"'"ROW  ADDRESS  ROW ADDR
ESS"
  80 FOR i=1 TO 192: LET m=i*2-2
: LET d= PEEK (63000+m)+256* PEE
K (63001+m): IF a$="d" THEN  GO
TO 86
  82 FOR x=4 TO 1 STEP -1: LET x
1=d- INT (d/16)*16: LET h$(x)= C
HR$ (x1+ CODE "0"+7*(x1>9)): LET
 d= INT (d/16): NEXT x
  84 PRINT i;"    ";h$,: GO TO 88

  86 PRINT i;"    ";d,
  88 NEXT i
  89 STOP
  90 SAVE "dfcode" CODE 64000,38
```

Assembler:

```
            10 ;ASSEMBLER FOR PROGRAM 1- DISPLAY FILE ADDRESSES
            20 ;
010040      30        LD    BC,£4000 ;START OF DISPLAY FILE
2118F6      40        LD    HL,63000 ;START ADDRESS OF STORE
1600        50        LD    D,0      ;SET CHARACTER ROW COUNTER TO ZERO
71          60 STORE  LD    (HL),C   ;STORE COL 0 ADDRESSES
23          70        INC   HL       ;WITH LOB FIRST
70          80        LD    (HL),B
23          90        INC   HL
04         100        INC   B        ;INCREMENT
78         110        LD    A,B
E607       120        AND   7        ;TEST FOR NEW CHARACTER ROW
20F6       130        JR    NZ,STORE
79         140        LD    A,C
C620       150        ADD   A,£20    ;ADD 32 TO LOB
4F         160        LD    C,A
14         170        INC   D        ;INCREMENT CHARACTER ROW COUNTER
7A         180        LD    A,D
D618       190        SUB   24       ;TEST FOR ALL 24 CHARACTER ROWS
C8         200        RET   Z
7A         210        LD    A,D
E607       220        AND   7        ;TEST FOR NEW SECTION
28E8       230        JR    Z,STORE
78         240        LD    A,B
D608       250        SUB   8        ;DECREMENT HOB BY 8
47         260        LD    B,A
18E2       270        JR    STORE
```

now know that register B holds the HOB and C the LOB.

In line 50, a counter is set up in register D to hold the number of character rows processed, initially zero. Line 60 labelled STORE is the start of the loop. Lines 70-90 contain the four instructions needed to store a two byte number: two of these do the actual storing while two update the memory pointer HL. Note how the LOB in register C is stored first using the normal convention.

The storage instructions use the same principle of "indirect addressing" seen in the last article (for rotating the bit pattern of a location in memory). The use of brackets around a register pair always indicates indirect addressing where the contents of a memory location pointed to by the register pair (NOT the contents of the register pair) are to be manipulated.

For example, LD (HL),C means Load the memory location pointed to by HL with the contents of register C. Here we see the versatility of the HL pair as locations pointed to by BC or DE can only be loaded from (or to) register A e.g. LD(BC),A and LD(DE),A. Locations pointed to by HL can be loaded from (or to) registers A,B,C,D,E,H and L, so HL is the

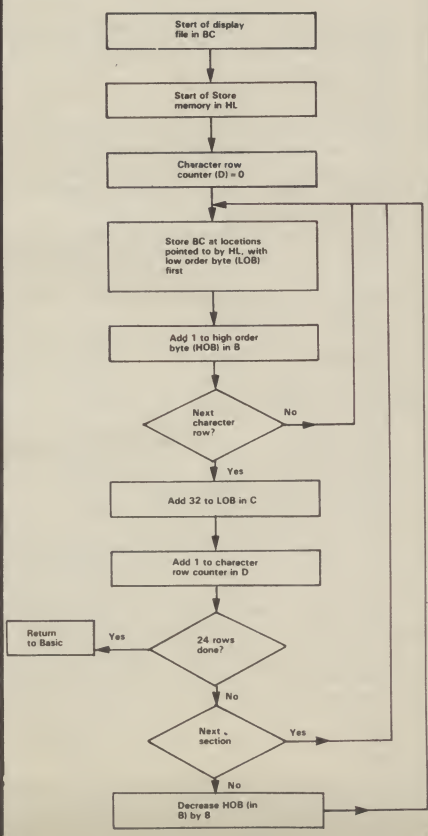
obvious choice for transfer from B and C. You may well ask why the two bytes cannot be stored in one go? Unfortunately, there is no Z80 instruction to do this indirectly unless we specify an "absolute" address such as LD(63000),BC. This would be all right for the first transfer but not for others to follow.

Line 100 increments the HOB by one with lines 110-130 testing for a new character row and jumping back to STORE if not. LD A,B in line 110 copies the contents of register B to A. This type of instruction is known as a "single register to register" copying instruction and is often used to get a number into the A register which offers the widest scope for manipulation. The manipulation here is done by AND,7.

I briefly referred to logical operators last month. This is a good example of the use of the powerful AND which is here being used to check whether the HOB is divisible by 8 (to indicate next character row). Suppose B contains 48H (HOB) = BIN 01001000. By ANDing with 7 = BIN 00000111 (looks at each bit of both numbers in turn and gives 1 only if both bits are 1), the result in the A register is 0. Any number in B which is not divisible by 8 will give a non-zero result (try experimenting with a few numbers), and it is the non zero results we are using here to jump back to STORE in line 130. With the zero flag set by this AND, the routine can move on to the next character row and the LOB incremented by 20H. Lines 140-160 transfer the LOB from C to A registers and back again after the addition.

Provided we are still working with the same one-third section of the screen, the next step would be to reduce the HOB by eight (so that, for example, the second row has column 0 addresses of 4020,4120...4720H. This is done by lines 240-260, this time operating on the contents of the B register through A. Line 270 gives the jump back for the next eight pixel rows. Before the CPU can get to this point though, it must perform two further tests on the character row counter in register D, incremented by one in line 170. First, have all 24 character rows been completed? If so, then the CPU can exit back to Basic. Lines 180-200 do this by subtracting 24 from D (again doing the actual operation in A) and RETurning on the condition that the zero flag is set (called a "conditional return"). Next, have eight or 16 character rows been done? (marking the next section). If so, then we can jump back to STORE without reducing HOB by eight. For example, the last pixel row of the top section (row 63) has a Col 0 address of 47E0H. When line 170 is reached, b=48H and C=00H (E0H+20H=00H: remember our "milometer" analogy in the last article which can only read up to 255 (FFH) miles before resetting to zero?). 4800H is the first address of the middle section, so we can go back to STORE without altering HOB or LOB. To test for a new section, AND 7 can be used again, this time on the character row counter in D (line 220).

Figure two:

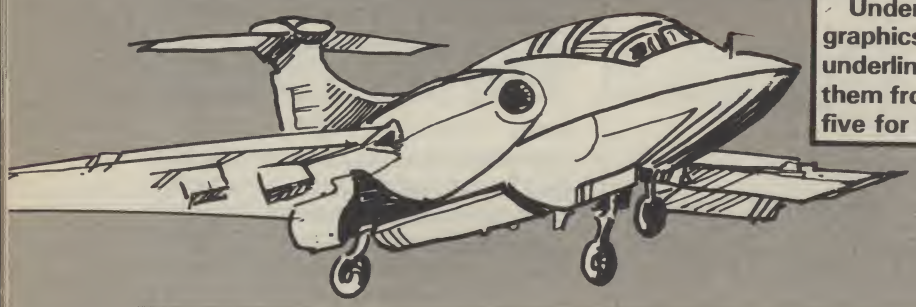


DAM RAIDERS

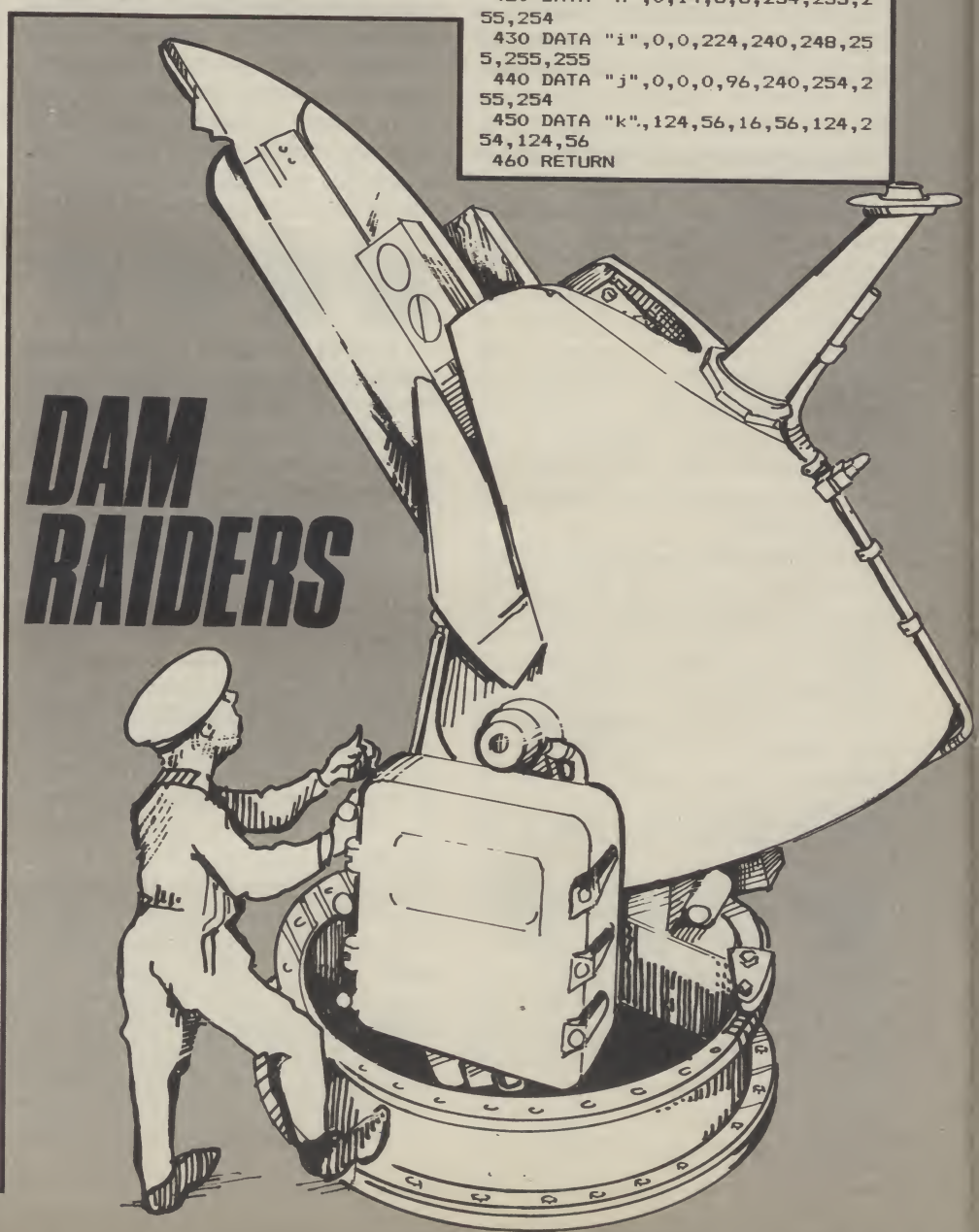
On the right of the screen is a dam which is under heavy attack from both air and sea. Your job, as the gunner on a battleship, is to protect the dam by destroying the remote-control enemy aeroplanes and submarines.

Dam Raiders was written for the Spectrum by Alec Letchfield of Chelmsford, Essex.

Underlined capital letters are those to be entered in graphics mode. Other graphics instructions have been underlined, and placed within brackets to distinguish them from the main body of the program. Refer to page five for help in entering these.



```
  10 GO SUB 300
  15 GO SUB 210
  20 LET hs=0: LET o$="alec"
  30 LET sc=0: LET g=3
  31 LET r=0: LET s=17+ INT ( RN
D *4)+1
. 32 LET z=11: LET w=13
  36 LET i=0: LET e=1+ INT ( RND
 *5)+1
  50 LET d=13: LET d1=13: LET ab
=0: LET n=9
  60 CLS
  80 PLOT 0,79: DRAW 230,0: PLOT
 230,0: DRAW 0,90
  85 FOR l=0 TO 95 STEP 10
  86 PLOT 230,l: DRAW 25,0: NEXT
 l
  90 PRINT  AT 0,16;"WATER LEVEL
 ";("(isp:g5:ig5:isp)" AND g=3);
("(isp:g5:ig5)" AND g=2);("(isp)
" AND g=1): IF g=0 THEN  GO TO 2
60
 100 PRINT  AT 0,0;"SCORE ";sc

 101 PRINT  AT 11,11;" ACBD "
 102 BORDER e: PAPER 7
 110 PRINT  AT s,r;" "; INK 3; A
T s,r+1;"F"; AT s,r+2;"G"; AT s,
r+3;"H"
 112 FOR u=r TO 27 STEP 1
 115 IF r>17 THEN  PRINT  AT s,u
+5;">"; AT s,u+4;" ": BEEP .01,u
: NEXT u: LET g=g-1: GO TO 31
 120 PRINT  AT e,i;" "; INK 2; A
T e,i+1;"I"; AT e,i+2;"J"
 130 FOR k=e TO 19 STEP 1
 140 IF i=29 THEN  PRINT  AT k+2
,30;"K"; AT k+1,30;" ": BEEP .01
,k: NEXT k: LET g=g-1: GO TO 32

 150 IF ab=1 THEN  PRINT  AT n,d
;"E"; AT n+1,d1;" ": BEEP .01,7:
 LET d1=d
 151 LET i=i+1
 152 LET r=r+.4
 158 IF ab=1 THEN  LET n=n-1
 159 IF z=12 THEN  LET w=w+.3
 161 FOR v=0 TO 60: IF  ATTR (w,
13)=59 THEN  BEEP .005,v: NEXT v
: LET sc=sc+20: GO TO 31
 165 IF  ATTR (n,d)=58 THEN  LET
 sc=sc+10: BEEP .005,33: GO TO 3
6
 170 IF  INKEY$ ="w" THEN  IF ab
=0 THEN  LET ab=1
 180 IF  INKEY$ ="q" THEN  IF z=
11 THEN  LET z=12
 181 IF ab=1 THEN  LET d=d+( INK
EY$ ="p" AND d<30)-( INKEY$ ="o"
 AND d>0)
 185 IF z=12 THEN  PRINT  AT w,1
3;"K"; AT w-1,13;" "
 186 IF w>21 THEN  GO TO 32
 190 IF n=1 THEN  GO TO 50
 200 GO TO 100
 210 PRINT  AT 0,10;"DAM RAIDERS
          by Alec Letchfield"

 220 PRINT  AT 3,0;"    You are
the gunner on a big battle ship
you have to protect the dam.Abov
e you is the enemy  aeroplane an
d below you is the  neuclear sub
marine"
 225 PRINT '"                You =
ACBD"
 226 PRINT '"          Aeroplane =
IJ"
 227 PRINT '"          Submarine =
FGH"
 228 PRINT '"     Missile left =
o"
 229 PRINT '"    Missile right =
p"
 230 PRINT '"     Fire missile =
w"
 231 PRINT '"  Fire detonator =
q"
 240 PAUSE 0
 250 RETURN
 260 CLS : IF sc>hs THEN  LET hs
=sc: INPUT "YOU HAVE TODAYS HIGH
EST SCORE   PLEASE ENTER YOUR NA
ME ";o$
 270 CLS : PRINT  AT 0,10;"DAM R
AIDERS"; AT 7,0;o$;" has todays
highest score of ";hs
 275 PRINT '"press any key to pl
ay again": PAUSE 0
 280 GO TO 30
 300 FOR f=1 TO 11
 310 READ a$
 320 FOR t=0 TO 7: READ a
 330 POKE  USR a$+t,a
 340 NEXT t: NEXT f
 350 DATA "a",31,28,28,255,255,2
55,127,63
 360 DATA "b",130,134,142,255,25
5,255,255,255
 370 DATA "c",132,132,196,255,25
5,255,255,255
 380 DATA "d",0,64,255,254,252,2
48,240,192
 390 DATA "e",8,8,28,28,28,28,62
,127
 400 DATA "f",0,0,0,0,127,255,25
5,127
 410 DATA "g",60,126,126,255,255
,255,255,255
 420 DATA "h",0,14,8,8,254,255,2
55,254
 430 DATA "i",0,0,224,240,248,25
5,255,255
 440 DATA "j",0,0,0,96,240,254,2
55,254
 450 DATA "k",124,56,16,56,124,2
54,124,56
 460 RETURN
```



SKI

Use keys one, two and eight to guide your skier down the hill, round the trees, and to the end of her course. The faster your time, the better. Complete four screens to be nominated for the Olympics.

Ski was written for the Spectrum by Stephen Nichols of Lewes, East Sussex.

Letters to be entered in graphics mode have been underlined.

```
  10 BORDER 7: PAPER 7
  15 INK 3
  16 CLS : GO TO 110
  25 CLS : PRINT  AT 0,0; INK 4;
"   A  A  A "; INK 1;"B"; INK 4;
" A A "; INK 1;"C"; INK 4;" A  A
  A"
  40 PRINT  AT 12,0;"GUIDE YOUR
SKIER DOWN THE SLOPE TO DE, TRY
NOT TO HIT THE TREES,IF YOU HIT
THEM 4 TIMES THE GAMEENDS."
  45 PRINT  AT 17,2;"1..LEFT 2..
RIGHT 8..DOWN"
  50 PRINT  AT 19,0;"OR USE THE
SINCLAIR INTERFACE  2"
  55 PRINT  AT 21,4; FLASH 1;"PR
ESS ANY KEY TO BEGIN"
  56 FOR L=-10 TO 60: BEEP 0.01,
L: NEXT L
  60 PAUSE 0
  70 GO TO 150
 110 REM UDG
 120 FOR A= USR "A" TO  USR "E"+
7
 130 READ USER: POKE A,USER
 140 NEXT A: GO TO 20
 150 DATA 24,60,60,126,126,255,2
55,24
 155 DATA 16,32,249,18,60,8,16,3
2
 160 DATA 8,4,159,72,60,16,8,4

 161 DATA 255,128,129,188,161,18
9,161,161
 162 DATA 255,1,1,1,121,73,73,73
 163 LET SCREEN=1
 165 LET HI=99
 169 LET D=50
 170 REM VARIABLES
 171 IF D >= 240 THEN  CLS : PRI
NT  AT 16,0;"  CONGRATULATIONS!
YOU SHOULD          ENTER THE OLY
MPICS!": FOR U=1 TO 50: BEEP 0.0
1,U: NEXT U: LET D=50: LET SCREE
N=1: GO TO 510
 175 CLS
 180 LET TIME=99
 190 LET ROW=1: LET COL=30
 210 LET HIT=0
 220 REM BACKGROUND
 230 FOR I=1 TO D
 240 PRINT  AT  INT ( RND *21),(
 RND *30); INK 4;"A"
 250 NEXT I
 255 PRINT  AT 21,20;"SCREEN ";S
CREEN
 260 PRINT  AT 0,0;"TIME ";TIME
 270 PRINT  AT 0,11;"BEST ";HI
 280 PRINT  AT 0,24;"HITS ";HIT

 285 LET A$="B"
 290 REM PRINT SKIER
 298 PRINT  AT 20,0;"DE"
 300 PRINT  AT ROW,COL; INK 1;A$

 305 PRINT  AT ROW,COL;" "
 310 LET K$= INKEY$
 320 IF K$="6" OR K$="1" THEN  L
ET COL=COL-1: LET A$="B"
 330 IF K$="7" OR K$="2" THEN  L
ET COL=COL+1: LET A$="C"
 340 IF K$="8" OR K$="3" THEN  L
ET ROW=ROW+1
 360 IF ROW>20 THEN  LET ROW=ROW
-1
 370 IF ROW<1 THEN  LET ROW=ROW+
1
 380 IF COL>30 THEN  LET COL=COL
-1
 390 IF COL<1 THEN  LET COL=COL+
1
 410 IF  ATTR (ROW,COL)=60 THEN
 LET HIT=HIT+1: GO TO 460
 425 IF ROW=20 AND COL=1 THEN  F
OR F=1 TO 25: BEEP .15,F: NEXT F
: GO TO 550
 429 IF TIME=9 THEN  PRINT  AT 0
,6;" "
 430 PRINT  AT 0,0;"TIME ";TIME:
 LET TIME=TIME-1: IF TIME <= 0 T
HEN  BEEP 1,1: GO TO 500
 435 IF HIT=4 THEN  GO TO 500
 440
 445 PRINT  AT ROW,COL; INK 1;A$

 446 PAUSE 5
 450 GO TO 305
 460 BEEP .1,1; BEEP 0.1,9
 470 PRINT  AT 0,24;"HITS ";HIT

 475 IF HIT=4 THEN  GO TO 500
 480 LET ROW=ROW+1: LET COL=COL-
1
 490 GO TO 310
 500 PRINT  AT 10,10; FLASH 1;"G
AME OVER"
 505 FOR I=10 TO -20 STEP -1: BE
EP 0.01,I: NEXT I
 510 PRINT  AT 19,3;"PRESS '0' F
OR ANOTHER GO "
 520.IF  INKEY$ ="0" OR  INKEY$
="5" THEN  LET SCREEN=1: LET D=5
0: LET HIT=0: GO TO 170
 530 GO TO 520
 550 PRINT  AT 10,8; FLASH 1;"CO
NGRATULATIONS": FOR I=1 TO 50: B
EEP 0.015,I: NEXT I
 570 LET T=99-TIME: IF T<HI THEN
  LET HI=T
 580 LET D=D*1.5: LET SCREEN=SCR
EEN+1
 585 PAUSE 120: GO TO 170
 590 GO TO 580
 600 SAVE "SKI" LINE 1
```

Fantasy

Fantasy Software has a string of hits to its credit. What are its plans for the future? Colette McDermott went to investigate.

FANTASY Software appears to have broken up. Programming brain Bob Hamilton, according to the news on the street, has decided to leave the company. Does this mean we are experiencing the first case of pop-group-split-up syndrome in the computer industry?

Realising my duty to you, and being of a curious nature, I went in search of the truth. Lunch was arranged. Would the atmosphere be tense?

Paul Dyer and Bob Hamilton are the joint directors of Fantasy. They appeared relaxed and on good terms, was this to fool their public? Using my close questioning technique I established that underneath this humorous and outwardly friendly facade the old friendship really was intact and that their personalities are still in perfect harmony.

They sat together, as though shielding each other from my scrutinizing and mighty pen. When talking they constantly looked to each other for assurance that what was being said was accepted; it usually was. Paul is the more public man of the partnership, used to dealing with the world at large, and he often, but politely, took over Bob's conversation as though defending him from me, as if that should be necessary!

It was immediately established that Bob was not leaving, but merely taking a well deserved rest. "I need a break from writing programs for the Spectrum and similar machines. I've gone as far as I can, for the moment, and fear that my work might become stale."

There is no evidence to suggest that such a thing is happening. Indeed all their games have been a big success in the top ten program chart. With titles like **Beaky and the Egg Snatchers, Doomsday Castle, The Pyramid** and **Backpackers Part 1** this successful partnership is going from strength to strength.

The Pyramid was released in September 1983 and **The Super Pyramid** will be released early this summer. It is a sequel, with the same scenario as The Pyramid and the plot revolving around the same character,

Ziggy. In the original version Ziggy zaps the aliens, but in the new one they also attack and fire at him. There are not as many chambers but the game is going to be more difficult. An extra feature has also been added to Ziggy. Each time he enters a new chamber he falls down a chute and his backpack shoots him around the chamber, "It's difficult to explain," said Paul, "but it really has the best arcade action I've ever seen." The Super Pyramid will retail at £7.50.

Bob went on to explain what he will be doing for the next year "I bought a cottage deep in the countryside so that I can work on my new projects." Paul interjected, grinning; "What Bob doesn't know is that the cottage next door is for sale, I'm considering buying it. The lounge is huge, 20 feet square, big enough for me to put a giant snooker table in!" They grinned at each other.

Bob wants to design and write some games for the QL "There is a growing market and it is not being catered for. I have been 80 per cent happy with the work I have already done and I now feel that I have reached saturation point," he said.

Fantasy Software is owned by Paul and Bob, each holding 50 per cent of the company. Paul spoke again with a more serious tone in his voice. "We have worked hard over the last two years setting up the company, sometimes sitting up all night to make sure the programs work properly." They both confessed that they are poor games players "Bob's worse than me," said Paul.

"We've had some near disasters, which were always caused by distributors going into receivership, but we have been able to weather this, unfortunately a lot of companies have not."

Backpackers Part 1 galloped straight into the charts on its release, but in nearly did not make

it, Paul explained "We got into a legal squabble with the author of **Hitch-hikers Guide to the Galaxy** because of the title we had intended to use. We managed to resolve this and in fact we may be doing a project sometime with the publishing house. Anyway, the game was meant to be released in September 1984. All the distributors and retailers were waiting for it and we had begun advertising.

Just as it was ready to go off for duplication we discovered an error in the program. We ended up sitting up 24 hours a day, Bob rewriting while I gave moral support and Ann, my fiancee making the coffee. Having sorted that one out, and knowing that the duplicators were on 24 hour stand-by we dashed off and headed for the motorway — and found ourselves fog bound!

The duplicators got straight on with the job as soon as we arrived and all the retailers had vans waiting to take the game away. Backpackers Part 1 was on sale in the shops 18 hours after we arrived at the duplicators. I would really like you to mention the duplicators because of all the hard work they put into it." Well, alright Paul, but just this once. Their name is I.T.D.

Partnerships, as we know, begin in some of the most obscure places, Bob and Paul are no exception. They worked for an engineering firm involved in aerospace technology, but on different projects. Paul, at this stage, was determined to tell me all about his work there, but again my skills were called into play. "No Paul," I thought "you are wandering off the subject." Using all my subtle and persuasive charm I butted in. "Paul, I don't want to know about that!" It worked.

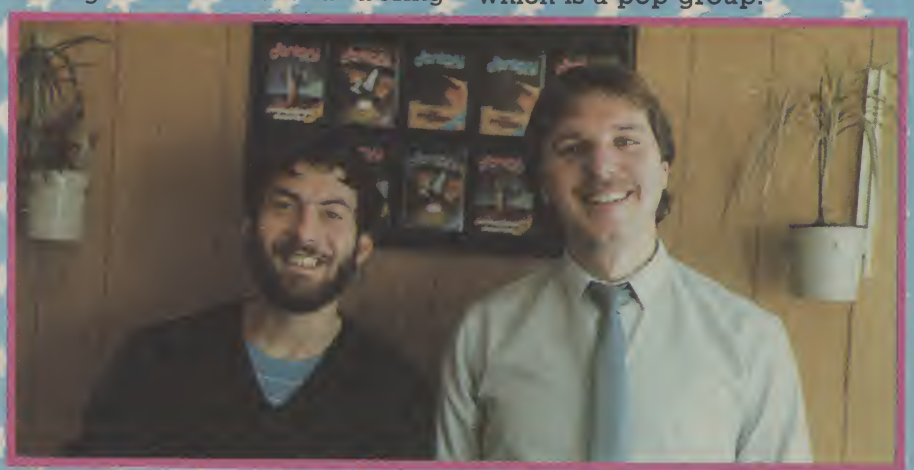
Having eventually got to know each other Bob began to confide in Paul his idea of making a computer game. "He wasn't sure how to go about the business side of it," continued Paul, having taken my hint about waffling in a most gentlemanly manner, "I felt that I could handle the business side, I've always had a flair towards that sort of area. We threw up our steady and secure jobs. It was quite a wrench. Although we had worked hard there we never felt the pressure that comes with running your own business."

"Our first company was called Quest Software," continued Paul "the two games we produced, **Black Hole** and **Violent Universe** received a marvellous response from the public and distributors alike. However, after six months of trading and establishing ourselves we received a severe letter from solicitors of another firm trading under that name." Bob sat glumly recalling the event. Paul continued, "It was apparent from our solicitors that we must change our name."

Paul and Bob would like to thank Lloyds Bank for their help in finding a name for the company. They look at each other and grin. Bob's expression to Paul was "you-tell-her." "Well," began Paul, "We had a visit from an amazingly boring banker," Bob laughed "you could say he was a boring banker from a boring bank on boring business." We all roared with laughter. Bob at this stage was looking very boyish and tried to avoid eye contact, which is yet another of my truth uncovering techniques. Just what did happen with the boring banker, had Bob subjected him to some dastardly deed? Yes, he had committted the sin of dozing off. "But at least he had the decency to keep his eyes open," continued Paul. Suddenly Bob jumped out of his seat and cried "I've got it, we'll call ourselves Fantasy Software."

Fantasy Software have now been in business for 18 months and both Paul and Bob are delighted with the success they have achieved. It is because of this success that they can afford to let Bob have a break.

So what will Paul be up to? "I shall continue with my work but I want to pursue some other projects. I have been approached to manage a few enterprises, one of which is a pop group."



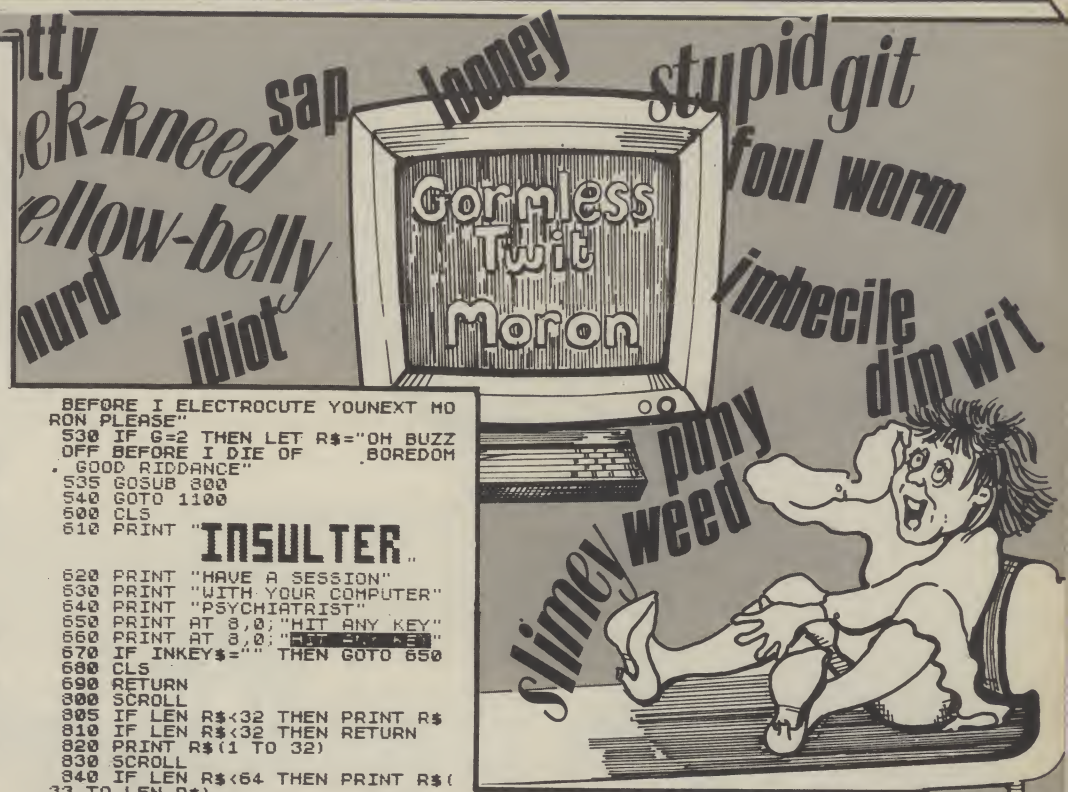
You may have heard of the famous program, Eliza, which takes on the role of psychiatrist, and which appears to have a sensible conversation with its 'patients'. Insulter also functions as a psychiatrist, but not the sort that anyone would like to meet. Any psychiatrist who calls you a ''foul worm'' at first sight, and then goes on to say that the fact that you have problems is the funniest thing that he has heard for weeks, must be lacking some of the professional graces.

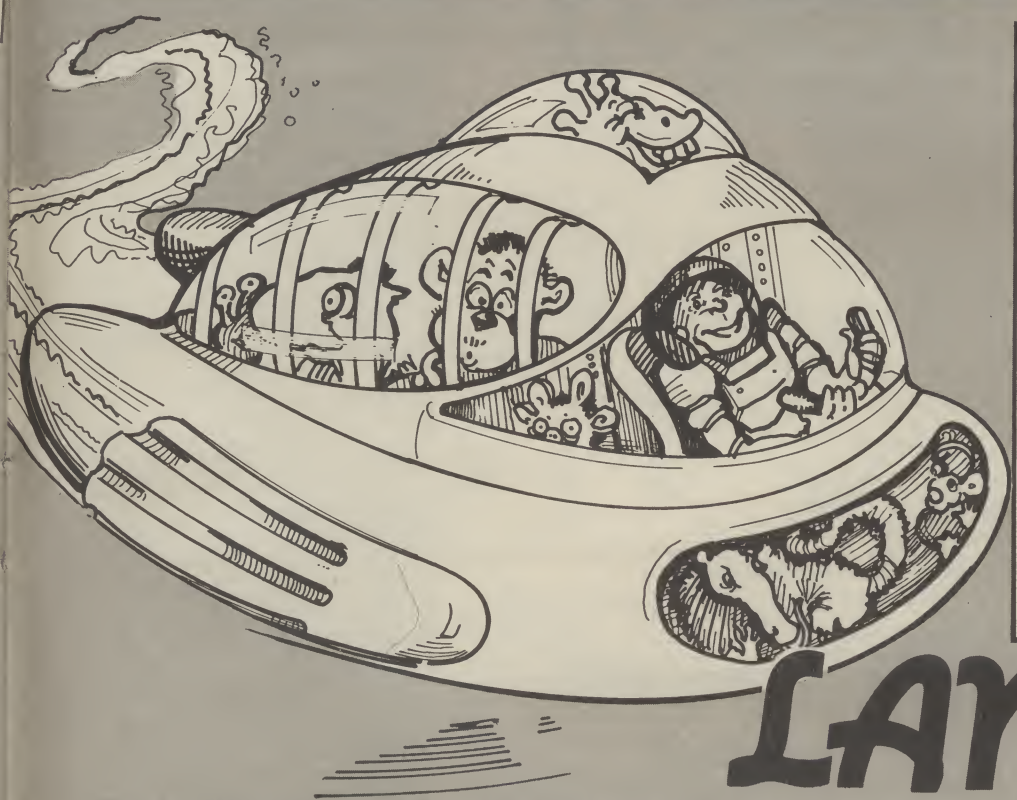
Written by Simon Brodbeck for the 16K ZX-81. Insulter will antagonise anyone who runs it. Try it on your friends. Better still, try it on your enemies.

INSULTER

```
    2 REM "INSULTER"
    5 GOSUB 600
   10 LET R$="WHO ARE YOU AND WHA
T DO YOU WANTYOU "
   20 GOSUB 1000
   25 LET R$=R$+"?"
   30 GOSUB 800
   40 INPUT Y$
   45 SCROLL
   50 PRINT Y$
   55 LET Y$=Y$+"                "
   57 LET R$=""
   60 IF Y$(1 TO 2)="ME" THEN LET
 R$="PLEASE ELABORATE"
   65 IF Y$(1 TO 4)="SHUT" THEN L
ET R$="SHUTTUP YOURSELF"
   70 IF Y$(1 TO 3)="WHY" THEN LE
T R$="SHUTTUP, I""M SUPPOSED TO
DO THE ASKING"
   75 IF Y$(1 TO 6)="NO    " THEN
 LET R$="NOBODY REFUSES WHEN I""
M AROUND"
   77 IF Y$(1 TO 5)="OH   " THEN
LET R$="TALKATIVE TODAY, AREN""T
 YOU"
   80 IF Y$(1 TO 4)="YOU " THEN L
ET R$="WHY BRING ME INTO IT?"
   85 IF Y$(1 TO 5)="I DO " THEN
LET R$="NO YOU DON""T"
   90 IF Y$(1 TO 5)="SHUT " THEN
LET R$="DON""T SPEAK TO ME LIKE
THAT"
   95 IF Y$(1 TO 8)="YES I DO" TH
EN LET R$="NO YOU DON""T"
  100 IF Y$(1 TO 6)="I HATE" THEN
 LET R$="WELL SO WHAT, I HATE YO
U"
  105 IF Y$(1 TO 8)="WHO SAYS" TH
EN LET R$="ME, AND MY WORD IS LA
W"
  110 IF Y$(1 TO 7)="ARE YOU" THE
N LET R$="WHATS IT GOT TO DO WIT
H YOU?"
  115 IF Y$(1 TO 10)="NO IT ISNT"
 THEN LET R$="YES IT IS"
  120 IF Y$(1 TO 7)="SO DO I" THE
N LET R$="GLAD WE AGREE ON SOMET
HING"
  125 IF Y$(1 TO 7)="SO WHAT" THE
N LET R$="YOU""RE A MANIAC, THAT
""S WHAT"
  130 IF Y$(1 TO 10)="HOW REVOLT"
 THEN LET R$="JUST LIKE YOU"
  140 IF Y$(1 TO 9)="NO IM NOT" T
HEN LET R$="YES YOU ARE"
  150 IF Y$(1 TO 11)="YES YOU ARE
" THEN LET R$="NO I""M NOT"
  160 IF Y$(1 TO 12)="NO YOU AREN
T" THEN LET R$="YES I AM"
  162 IF Y$(1 TO 11)="NO YOUR NOT
" THEN LET R$="YES I AM"
  167 IF Y$(1 TO 12)="NO YOURE NO
T" THEN LET R$="YES I AM"
  170 IF Y$(1 TO 8)="YES I AM" TH
EN LET R$="NO YOU""RE NOT"
  180 IF Y$(1 TO 6)="I LIKE" THEN
 LET R$="NEVER MIND WHAT YOU THI
NK"
  190 IF Y$(1 TO 7)="I THINK" THE
N LET R$="YOU""RE NOT PAID TO TH
INK"
  200 IF Y$(1 TO 7)="YOU ARE" THE
N LET R$="NO I""M NOT"
  210 IF Y$(1 TO 9)="YOU ARENT" T
HEN LET R$="YES I AM"
  220 IF Y$(1 TO 4)="I AM" THEN L
ET R$="DON""T BE STUPID, OF COUR
SE      YOU""RE NOT"
  230 IF Y$(1 TO 6)="IM NOT" THEN
 LET R$="DON""T TALK RUBBISH, YO
U ARE"
  240 IF Y$(1 TO 5)="YOUR " THEN
 LET R$="WELL WHAT ABOUT YOURS, T
HEN?"
  250 IF Y$(1 TO 3)="MY " THEN LE
T R$="CAN""T YOU TALK ABOUT SOME
ONE    ELSE FOR A CHANGE?"
  260 IF LEN R$>0 THEN GOTO 30
  270 LET F=INT (RND*16)
  280 GOSUB (F*10)+300
  290 GOTO 30
  300 LET R$="STOP DIGRESSING"
  305 RETURN
```

```
 310 LET R$="ABRAHAM LINCOLN ONC
E SAID THAT"
 315 RETURN
 320 LET R$="YOU DO SPOUT RUBBIS
H, WHAT ON   EARTH ARE YOU ON AB
OUT?"
 325 RETURN
 330 LET R$="WHY DON""T YOU GO A
ND PLAY ON    THE M1?"
 335 RETURN
 340 LET R$="EXCUSE ME, YOU SEEM
 TO HAVE      DROPPED YOUR FALSE
TEETH"
 345 RETURN
 350 LET R$="BIT OF A BORE, AREN
""T YOU?"
 355 RETURN
 360 LET R$="THATS THE KIND OF S
UB-ADOLESCENTINFATUATION I WOULD
 EXPECT FROM A "
 363 GOSUB 1000
 365 RETURN
 370 GOTO 500
 380 LET R$="VERY INTERESTING I
DON""T THINK"
 385 RETURN
 390 LET R$="DID YOU KNOW THAT Y
OU""VE GOT A  PIECE OF FLUFF HAN
GING FROM YOUREAR?"
 395 RETURN
 400 LET R$="YOU""VE GOT A BIG M
OUTH FOR A    "
 403 GOSUB 1000
 405 RETURN
 410 LET R$="THATS THE FUNNIEST
THING I""VE    HEARD FOR WEEKS"
 415 RETURN
 420 LET R$="WERE YOU ALWAYS SUC
H A JERK?     LOOK AT ME-I""M PER
FECT"
 425 RETURN
 430 LET R$="NEGATIVE LITTLE TWE
RP. IS THAT   ALL YOU""VE GOT TO
SAY?"
 435 RETURN
 440 LET R$="ARE YOU A POLITICIA
N,YOU         "
 443 GOSUB 1000
 444 LET R$=R$+"?"
 445 RETURN
 450 LET R$="YOU""VE GOT VERBAL
DIARRHOEA BY  THE SOUND OF IT. N
OT UNCOMMON   FOR A "
 460 GOSUB 1000
 470 RETURN
 500 LET G=INT (RND*3)
 510 IF G=0 THEN LET R$="ITS BEE
N REALLY BORING TALKING  TO YOU.
 SHOVE OFF"
 520 IF G=1 THEN LET R$="GO AWAY
  BEFORE I ELECTROCUTE YOUNEXT MO
RON PLEASE"
 530 IF G=2 THEN LET R$="OH BUZZ
 OFF BEFORE I DIE OF     BOREDOM
. GOOD RIDDANCE"
 535 GOSUB 800
 540 GOTO 1100
 600 CLS
 610 PRINT "INSULTER"
 620 PRINT "HAVE A SESSION"
 630 PRINT "WITH YOUR COMPUTER"
 640 PRINT "PSYCHIATRIST"
 650 PRINT AT 8,0;"HIT ANY KEY"
 660 PRINT AT 8,0;"HIT ANY KEY"
 670 IF INKEY$="" THEN GOTO 650
 680 CLS
 690 RETURN
 800 SCROLL
 805 IF LEN R$<32 THEN PRINT R$
 810 IF LEN R$<32 THEN RETURN
 820 PRINT R$(1 TO 32)
 830 SCROLL
 840 IF LEN R$<64 THEN PRINT R$(
33 TO LEN R$)
 850 IF LEN R$<64 THEN RETURN
 860 PRINT R$(33 TO 64)
 870 SCROLL
 880 PRINT R$(65 TO LEN R$)
 890 RETURN
1000 LET A$="POTTYSTUPIDPEURILED
AFTCONSTIPATEDANHYDROUSREGURGITA
TEDFOULSLIMEY"
1010 LET B$="LUNATICBUZZARDPOMEG
RANATETOADWORMPESTILENCEMANIACMO
RONMOSQUITO"
1020 LET C$="■ ■£<÷6FRVINKEY$"
1030 LET D$="■ ■?,26GMRZ"
1040 LET A=INT (RND*9)+1
1045 LET B=INT (RND*9)+1
1050 LET R$=R$+(A$(CODE C$(A) TO
 CODE C$(A+1)-1)+" "+B$(CODE D$(
B) TO CODE D$(B+1)-1))
1070 RETURN
1100 STOP
1200 SAVE "INSULTE■"
1210 RUN
```





```
  10 CLS
  20 PRINT "R SANTY PRESENTS"
  28 PRINT "LANDING"
  29 PRINT "■■)--------"
  30 PRINT "GOOD LUCK"
  31 LET T=0
  40 LET H=500
  50 LET V=50
  60 LET F=120
  70 PRINT "TIME";T,"HEIGHT";H
  80 PRINT "VEL";V,"PETROL";F
  90 IF F=0 THEN GOTO 140
 100 PRINT "BURN?(0 TO 30)"
 110 INPUT B
 120 IF B<0 THEN LET B=0
 130 IF B>30 THEN LET B=30
 140 IF B>F THEN LET B=F
 150 LET V1=V-B+5
 160 LET F=F-B
 170 IF (V1+V)/2>=H THEN GOTO 22
0
 180 LET H=H-(V1+V)/2
 190 LET T=T+1
 200 LET V=V1
 205 CLS
 210 GOTO 70
 220 LET V1=V+(5-B)*H/V
 230 IF V1>5 THEN PRINT "YOU CRA
SHED:ALL DEAD"
 240 IF V1>1 AND V1<=5 THEN PRIN
T "OK:BUT SOME INJURIES"
 250 IF V1<=1 THEN PRINT "GOOD L
ANDING"
 260 STOP
```

LANDER

Today disaster struck Menagerie, the space ship zoo of galaxy nine, and the space ship was destroyed. In your escape pod you have several rare animals which you are attempting to rescue. Used to a relaxed life in zero gravity they will all be killed if you strike the ground at more than five parsecs an hour, and several will be injured if you land at more than one parsec per hour. By carefully controlling your use of fuel, can you make a perfect landing?

Lander was written for the 16K ZX-81 by Richard Santy, aged 10.

AIR ATTACK

Cradley City is a ghost town. Its inhabitants were all killed a year ago by a virulent plague. Now you must land on the site of the town in order to save several important artefacts. It is essential that you destroy all the buildings before you land, with your specially created disinfectant bombs. One building left standing could infect you, and all your passengers, with the plague. Attack those buildings in order to survive.

Air Attack was written for the 16K ZX-81 by Chris Robson of Cowes, Isle of Wight. The game should be started using RUN 9000, rather than by using RUN.

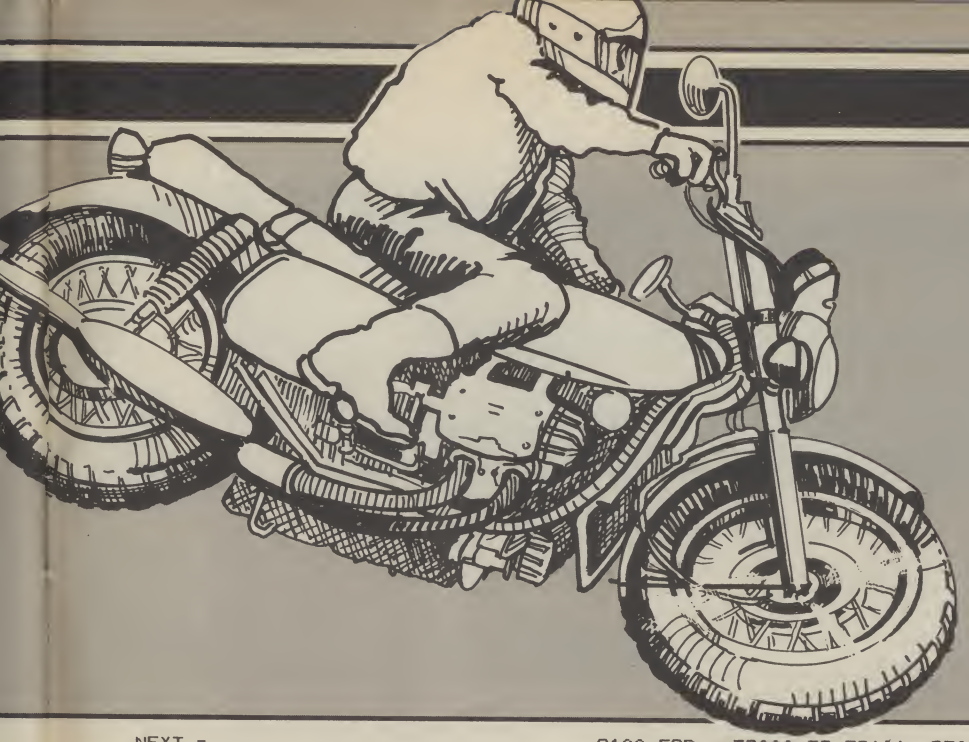
```
   1 REM 00000000 THIS REM LINE
IS AT LEAST 112 CHARACTERS LONG
0000000000000000000000000000000000
0000000000000000000000000000000000
0000000000000000000000000000000000
000
  10 LET FRAME=1
  20 LET S=0
  30 RAND USR 16518
  40 POKE 16516,0
  50 POKE 16517,0
  60 LET A$="004334077554022355 5
012200000000"
  70 GOSUB 1000
  80 FOR Y=0 TO 19
  90 FOR X=0 TO 27
 100 IF INKEY$<>"" THEN RAND USR
 16526
 110 RAND USR 16579
 120 RAND USR 16579
 130 IF USR 16539<>0 THEN GOTO 5
00
 140 NEXT X
 150 RAND USR 16561
 160 NEXT Y
 170 LET S=S+5000
 180 LET FRAME=FRAME+1
 190 GOTO 70
 500 LET S=S+100*FRAME*(Y-14+FRA
ME)+10*X-40
 510 PRINT AT 5,5;"SCORE = ";S
 520 PRINT AT 8,0;"    PRESS ANY
KEY TO CONTINUE"
 530 IF INKEY$="" THEN GOTO 530
 540 IF INKEY$<>"" THEN GOTO 540
 550 RUN
1000 CLS
1010 RAND
1015 PRINT AT 20,0;"▒▒▒
```

```
  10 REM **DARTS BY DAVID ROONEY
**
  20 BORDER 2: PAPER 1: INK 6: C
LS
  30 GO SUB 8000: REM INSTRUCTIO
NS
  40 REM DEFINE VARIABLES
  50 LET A=11: LET B=1: LET C=20
0: LET D=20: LET E=0
  60 REM SET UP DART BOARD
  65 CLS
  68 PRINT  AT 0,0; INK 0; PAPER
 7;"DARTS LEFT=";D; AT 0,14;"POI
NTS TO GET=";C
  70 FOR F=2 TO 20 STEP 2: BEEP
.009,1: PRINT  AT F,28; INK 7;"(
2*isp)": NEXT F: BEEP .5,10
  80 FOR F=1 TO 19 STEP 2: BEEP
.009,1: PRINT  AT F,28; INK 0;"(
2*isp)": NEXT F: BEEP .5,10
  81 PRINT  AT 6,3; FLASH 1;"ANY
 KEY TO CONTINUE": PAUSE 0: BEEP
 .5,0: PRINT  AT 6,3; FLASH 0;"
                "
  82 DIM K(20): FOR H=1 TO 20
  83 LET K(H)= INT ( RND *19)+1
  84 PRINT  AT H,30;K(H)
  85 NEXT H
  90 PRINT  AT A,B; INK 6;"AB"
 100 LET A=A+( INKEY$ ="z" AND A
<20)-( INKEY$ ="q" AND A>1)
 110 LET B=B+1
 120 BEEP 0.06,0
 130 IF B=27 THEN  BEEP .8,10: G
O TO 150
 140 GO TO 90
 150 LET C=C-K(A)
 180 LET D=D-1
 185 IF E=0 OR E=1 THEN  GO TO 1
90
 186 IF D>0 AND C <= 0 THEN  GO
TO 600
 187 IF D=0 AND C <= 0 THEN  GO
TO 600
 188 IF D>0 AND C>0 OR D=C AND D
>0 THEN  LET A=11: LET B=1: GO T
O 60
 190 IF D=0 AND C>0 THEN  GO TO
300
 200 IF D>0 AND C>0 THEN  LET B=
1: LET A=11: GO TO 60
 210 IF E=0 THEN  PAUSE 1: IF D>
0 AND C <= 0 THEN  GO TO 400
 211 IF E=1 THEN  GO TO 500
 300 FOR F=0 TO 7: FOR G=0 TO 7:
 BORDER G: BEEP .001,F: NEXT G:
NEXT F
 305 CLS
 310 FOR F=1 TO 14
 320 PRINT  AT 10,F;" HARD LUCK!
"; AT 12,F+2;" BEATEN AGAIN"; AT
 14,F+4;" MUTTON HEAD": BEEP .05
,F*2
 330 NEXT F
 335 PAUSE 0
 340 GO SUB 9000: REM ANOTHER GA
ME
 400 FOR F=0 TO 7: FOR G=0 TO 7:
 BORDER G: BEEP .001,F: NEXT G:
NEXT F
 401 CLS
 405 FOR F=1 TO 10
 410 PRINT  AT 10,F;" EXCELENT";
 AT 12,F+2;" NOW IT GETS HARDER"
; AT 14,F+4;" CHAMP": BEEP .05,F
*2
 415 NEXT f
 417 PAUSE 0
 420 LET C=350
 425 LET D=20
 427 LET E=E+1
 430 GO TO 200
 500 FOR F=0 TO 9: FOR G=0 TO 7:
 BORDER G: BEEP .009,F: NEXT G:
NEXT F
 505 CLS
 510 FOR F=1 TO 10: PRINT  AT 6,
F;" WELL DONE!!": BEEP .009,F: N
EXT F
 520 PRINT : PRINT : PRINT " BUT
 HAVE YOU GOT THE SKILL TO
       WIN THE CUP"
 530 PRINT  AT 21,1; FLASH 1;"RE
MEMBER 101 WITH  SIX  ARROWS"
 540 LET D=6: LET C=101: LET E=E
+1: LET A=11: LET B=1
 545 PAUSE 0
 550 GO TO 60
 600 CLS : PRINT  AT 2,3; BRIGHT
 1; FLASH 1;"YOU'VE WON THE CUP"

 605 PRINT  AT 21,11; FLASH 1;"P
RESS A KEY": PAUSE 0
 610 PLOT 90,40: DRAW 0,60: DRAW
 60,0: DRAW 0,-60: DRAW -60,0
 620 PLOT 150,90: DRAW 20,0: DRA
W 0,-40: DRAW -20,0
 630 PLOT 150,80: DRAW 10,0: DRA
W 0,-20: DRAW -10,0
 640 PRINT  AT 12,13; FLASH 1;"T
EA"
 650 BEEP .5,7: BEEP .5,7: BEEP
.5,7: BEEP .5,9: BEEP .5,7: BEEP
 .5,7: BEEP .8,2: BEEP .5,4: BEE
P .5,2: BEEP .5,4: BEEP .5,6: BE
EP .8,7: BEEP .8,7
 660 DIM\A$(5): INPUT "ENTER INI
TIALS";A$: FOR F=1 TO 5: PRINT
AT 14,F+11;A$(F): BEEP .5,0: NEX
T F
 670 PAUSE 100: GO TO 9000
8000 PRINT  AT 0,8;"WELCOME TO D
ARTS"
8010 PRINT : PRINT : PRINT "HAVE
 YOU THE SKILL TO SCORE MORETHAN
 200 WITH JUST 20 DARTS      HAVE
 YOU THE SKILL TO SCORE MORETHAN
 350 WITH JUST 20 DARTS      HAVE
 YOU THE SKILL TO SCORE MORETHAN
 101 WITH JUST  5 DARTS    "
8020 PRINT : PRINT "   PRESS A K
EY TO FIND OUT"
8030 PRINT  AT 13,3;"'q'  up
                    'z'  down"

8400 PAUSE 0
8500 FOR F=0 TO 7: READ V: POKE
 USR "A"+F,V: NEXT F: FOR G=0 TO
 7: READ Q: POKE  USR "B"+G,Q: N
EXT G
8510 DATA 248,132,130,127,127,13
0,132,248,0,0,130,255,255,130,0,
0
8600 RETURN
9000 CLS : PRINT  AT 12,5;"ANOTH
ER GAME?(Y/N)": INPUT X$: IF X$=
"y" THEN  RUN
9010 PRINT : PRINT "BYE BYE"
9020 STOP
9100 SAVE "DARTS" LINE 1: VERIFY
 ""
```

Check your reactions with Darts, written for the Spectrum computer by David Rooney of Middlesbrough, Cleveland.

You must throw your dart from the left hand side of the screen and guide its flight in order to score 200 with 20 darts, 350 with 20 darts or 101 with 5 darts.

```
  1 BEEP .1,10: GO SUB 9000
 10 RANDOMIZE : LET sc=0: LET l
i=3
 15 LET bus= INT ( RND *17)+2

 20 GO SUB 1000
 21 RANDOMIZE  USR 32069
 30 LET m=0
 32 PRINT  AT 1,11;"0 M.P.H."

 35 IF  INKEY$ ="" THEN  GO TO
35
 40 LET m=m+5+ INT ( RND *6)
 41 BEEP .17,-50: BEEP .1,-55

 45 IF m>170 THEN  LET m=170
 50 PRINT  AT 1,11;m;" M.P.H."

 60 IF  INKEY$  <> "" THEN  GO
TO 40
 65 LET mp=m
 70 LET z= INT ( RND *11)
 80 LET m=m+(z-5)-40
 90 LET j=9+ INT (m/7.5+.5)
 91 FOR o=1 TO 100: NEXT o
100 IF m<-5 THEN  LET j=6
110 FOR n=1 TO 3
120 PRINT  PAPER 6; AT 10,n-1;"
 "; AT 10,n-1;" FG"
121 BEEP .1,-50
130 NEXT n
140 FOR o=10 TO 15: BEEP .01,o:
NEXT o: PRINT  AT 10,3;"  "; AT
 9,5;"IH"; AT 9,5;"  "; AT 8,6;"
IH": POKE 32046,10: RANDOMIZE  U
SR 32044
160 IF j=6 THEN  GO TO 200
170 FOR n=6 TO j
180 PRINT  AT 8,n-1;" "; AT 8,n
;" IH"
181 BEEP .1,-40: BEEP .1,-50: B
EEP .1,-59
190 NEXT n
200 FOR o=1 TO 5: BEEP .01,j: N
EXT o: PRINT  AT 8,j;"   "; AT 9
,j+1;"IH"; AT 9,j+1;"   "; AT 10
,j+2;"IH"
220 IF j <> bus+7 THEN  GO TO 2
000
230 POKE 32071,1: RANDOMIZE  US
R 32069: FOR n=j+3 TO 29: PRINT
 AT 10,n-1;"  "; AT 10,n;" FG":
BEEP .1,-50: BEEP .01,45: BEEP .
01,55: BEEP .1,-59: NEXT n: POKE
 32071,5
260 PRINT  AT 10,29;"FG ": RAND
OMIZE  USR 32000
270 RANDOMIZE  USR 32022: BORDE
R 7: PAPER 7: INK 0: CLS
280 PRINT  AT 4,11;"GREAT JUMP"

290 PRINT  AT 6,2;"YOU CLEARED
ALL ";bus;" BUSES AT"
300 PRINT  AT 8,6;"A SPEED OF "
;mp;" M.P.H."
310 FOR x=1 TO 400: NEXT x
311 LET sc=sc+100
312 LET li=li+1
313 RANDOMIZE  USR 32022: CLS

319 GO TO 15
999 STOP
1000 BORDER 5: PAPER 6: INK 0: C
LS
1010 PRINT  AT 11,0; INK 3;"[redacted]
"
1020 PRINT  AT 10,5;"AB"
1030 FOR n=7 TO bus+6
1040 PRINT  AT 10,n;"E": NEXT n

1050 PRINT  AT 10,bus+7;"DC"
1070 FOR o=3 TO 5: FOR l=0 TO 31
: PRINT  AT o,l; INK 0; PAPER (
INT ( RND *5)+2);"L": NEXT l: NE
XT o
1075 PRINT  AT 2,0;"[redacted]": FOR j=12
TO 21: PRINT  AT j,0; OVER 1; IN
K 4;"[redacted]": NEXT j:
1076 PRINT  AT 7,0; INK 4; OVER
1;"[redacted]"
1080 PLOT 0,152: DRAW 255,0
1090 DRAW 0,-32
1092 DRAW -255,0
1093 DRAW 0,32
1094 PLOT 0,128: DRAW 255,0: PLO
T 0,120: DRAW 255,0
1096 PRINT  AT 6,8; BRIGHT 1; OV
ER 1;"S T U N T M A N"; AT 6,0;
OVER 1; BRIGHT 0; PAPER 7;"[redacted]
"
1099 PRINT  AT 14,10; PAPER 3; I
NK 7;"SCORE:";sc;" "; AT 16,10;
PAPER 3; INK 7;"LIVES:";li;" "

1100 RETURN
2000 FOR n=1 TO 10: POKE 32046,
INT ( RND *10)+1: LET l= USR 320
44: BEEP .1,-50: BEEP .1,-50: PR
INT  AT 10,j+2; OVER 1; BRIGHT 1
; FLASH 1;"JK"; AT 10,j+2; OVER
1;"KJ": NEXT n
2010 RANDOMIZE  USR 32022: BORDE
R 7: PAPER 7: INK 0: CLS
2020 PRINT  AT 4,3;"YOU HAVE CRA
SHED"
2040 FOR j=1 TO 300: NEXT j: LET
 l= USR 32022
2050 LET li=li-1
2055 IF li <= 0 THEN  GO TO 3000

2060 GO TO 20
3000 CLS : BORDER 0: PAPER 0: IN
K 6: CLS
3005 FOR z=0 TO 8: POKE 32046,12
: LET l= USR 32044: BEEP .1,-50:
 BEEP .1,-45: PRINT  INK 6; AT 1
4,z;" YOU SCORED ";sc: PRINT  AT
 14,z+19;" IH": NEXT z
3010 FOR z=0 TO 29: POKE 32046,
INT ( RND *5)+1: LET l= USR 3204
4: BEEP .1,-50: BEEP .1,-45: PRI
NT  INK 7; AT 12,z;"END OF GAME.
 NO LIVES LEFT      "(z+1);"IH":
```



Prove your skill as a Motorbike Stunter in this stylish Spectrum program written by David Ritchie of Stockbridge Village, Liverpool. When the row of double decker buses appears on screen, increase your speed to what you feel is appropriate, and then watch your bike zoom up the ramp, and hurtle across the buses.

```
NEXT z
3020 RANDOMIZE  USR 32000: INPUT
 "ANOTHER GAME (y/n)?   :";s$
3030 FOR j=30 TO 0 STEP -1: POKE
 32046,2: LET l= USR 32044: PRIN
T  AT 12,j;"FG "; AT 14,j;"FG ":
 NEXT j
3041 IF s$="n" THEN  FOR z=0 TO
8: POKE 32046,12: LET l= USR 320
44: BEEP .1,-50: BEEP .1,-45: PR
INT  INK 6; AT 14,z;" GOOD BYE
": PRINT  AT 14,z+13;" IH": NEXT
 z: STOP
3042 IF s$="y" THEN  LET s=0: GO
 TO 2
3043 GO TO 3020
9000 FOR i= USR "a" TO  USR "i"+
7: READ x: POKE i,x: NEXT i
9010 DATA 0,0,3,12,48,64,255,0,3
1,97,129,1,1,1,255,0,0,0,128,96,
24,6,255,0,248,134,129,128,128,1
28,255,0
9020 DATA 62,85,127,127,85,127,1
27,34,3,3,1,1,27,38,37,26,128,13
6,249,40,88,228,228,24,136,220,1
78,210,204,128,0,0,0,1,13,18,45,
19,18,12
9030 FOR i=0 TO 7: POKE  USR "j"
+i, INT ( RND *254)+1: NEXT i
9040 FOR i=0 TO 7: POKE  USR "k"
+i, INT ( RND *254)+1: NEXT i
9050 FOR i=0 TO 7: READ a: POKE
 USR "l"+i,a: NEXT i
9060 DATA 124,130,170,130,84,68,
56,254
```

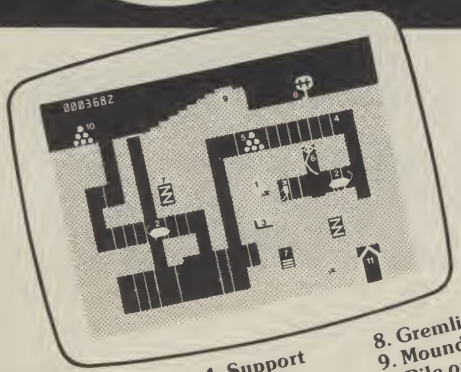
```
9100 FOR x=32000 TO 32101: READ
a: POKE x,a: NEXT x
9110 DATA 33,0,60,58,120,92,71,6
2,24,211,254,62,0,211,254,16,254
,43,188,32,238,201
9120 DATA 22,0,33,0,64,126,203,6
3,119,35,62,88,188,32,246,20,62,
9,186,32,237,201
9130 DATA 33,200,21,6,40,0,17,0,
0,197,229,205,181,3,225,193,43,4
3,43,43,43,43,16,238,201
9140 DATA 33,4,5,6,128,17,1,0,19
7,229,205,181,3,225,193,35,35,35
,35,35,35,16,238,37,37,37,37,62,
255,188,32,227,201
9200 BORDER 0: PAPER 5: INK 0: C
LS : FOR f=100 TO 1 STEP -1: PLO
T 132-f/2,105+f/2: DRAW f,0: NEX
T f: FOR f=0 TO 40: PLOT 132-f,1
65-f: DRAW f*2,0: NEXT f
9210 PRINT  AT 3,14; PAPER 0; IN
K 6; BRIGHT 1;"DAVID"; AT 5,13;
BRIGHT 1; INK 7; PAPER 0;"RITCHI
E"; AT 7,16; PAPER 0; INK 7; BRI
GHT 1;"@"
9220 PRINT  AT 10,11;"JAN 1985 @
"
9250 FOR z=3 TO 23: POKE 32046,
INT ( RND *5)+1: LET l= USR 3204
4: BEEP .1,-50: BEEP .1,-45: PRI
NT  INK 1; AT 18,z;"    IGIGIGIG
IGIGIGIGIGIG"(z+1);"IH"; AT 19
,z;"    IG S T U N T M A NIG"(z+
1);"IH"; AT 20,z;"    IGIGIGIGIG
IGIGIGIGIGIG"(z+1);"IH": NEXT z
```

```
9260 FOR j=24 TO 29: BEEP .1,-50
: BEEP .1,-55: BEEP .1,-45: PRIN
T  AT 18,j;" IH"; AT 19,j;" IH";
 AT 20,j;" IH": NEXT j
9270 PRINT  AT 12,8;"SINCLAIR PR
OGRAMS"; OVER 1; AT 12,8;"------
-----------"
9280 PRINT  AT 14,7;"INSTRUCTION
S? (y/n)"
9285 INPUT a$: IF a$="y" OR a$="
Y" THEN  GO TO 9400
9286 IF a$="n" OR a$="N" THEN  L
ET l= USR 32022: BORDER 7: PAPER
 7: INK 0: RETURN
9400 FOR j=29 TO 1 STEP -1: PRIN
T  AT 18,j;"IG "; AT 19,j;"IG ";
 AT 20,j;"IG ": BEEP .1,-50: BEE
P .1,-55: BEEP .1,-59: BEEP .1,-
45: NEXT j: RANDOMIZE  USR 32022
: BORDER 7: PAPER 7: INK 0: CLS

9500 BORDER 0: PAPER 0: INK 7: C
LS : PRINT  AT 0,10;"KKKKKKKKKK"
; AT 1,10;"KSTUNTMANK"; AT 2,10;
"JJJJJJJJJJ"
9600 PRINT  AT 5,0;"IN THIS GAME
,ITS ON WITH YOUR    CRASH HELMET
 AND AWAY YOU GO.    YOU MUST JUM
P OVER A LINE OF     BIG DOUBLE D
ECKER BUSES.TO DO    THIS HOLD DO
WN ANY KEY, WATCH    YOUR SPEED I
NCREASE,LET GO OF    THE BRAKES (
REMOVE FINGER),      AND WATCH YO
UR STUNTMAN FLY      OVER THE RAM
PS .....             "
9610 PRINT  AT 19,0;"FGFGFGFGFGF
GFGFGFGFGFGFGFGFGFGFGFGFGFG P R E
S S   A    K E Y FGFG"
9620 PRINT  AT 21,0;"FGFGFGFGFGF
GFGFGFGFGFGFGFGFGFGFGFG"
9630 PAUSE 0
9640 RANDOMIZE  USR 32022: BORDE
R 7: PAPER 7: INK 0: CLS
9650 RETURN
9993 STOP
9994 RETURN
9995 SAVE "STUNTMAN" LINE 1
9999 BORDER 7: PAPER 7: INK 0
```

LOOK!

NOW THERE ARE 3

HI-RES PROGRAMS FOR THE 16K ZX-81



1. Nuggets
2. Giant Rats
3. Burrowing Rat
4. Support
5. Cave In
6. Snake
7. Snake Nest
8. Gremlin
9. Mound
10. Pile of Earth
11. Cave

FORTY NINER

In 1849 the Great American Gold Rush started. Almost everyone who could sold up everything and dashed to the west coast to look for this precious metal – including you!

You must excavate this precious metal – but can you survive the giant rats and that vicious Gremlin which will come to infest your mine? Can you trick the snakes into leaving their comfortable nests and destroy the rats for you? Can you keep the Gremlin at bay?

Riches await you – but so do the hazards!

ROCKET MAN

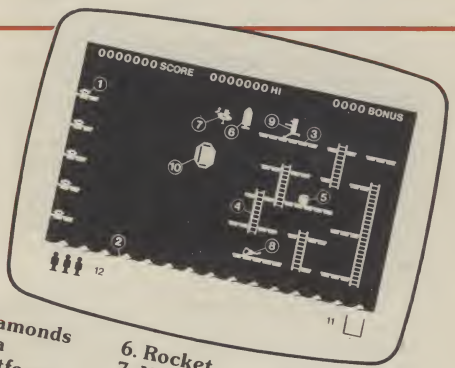
Get rich quick by collecting Diamonds that are simply lying there waiting for you!

Oh . . . I forgot to mention that there are one or two problems!

There is an expanse of shark infested water between you and the Diamonds and a strange breed of Bubble that seems hell bent on getting you in it! Somehow you must cross it . . . .

You have a Rocket Pack to help you (a Vulture on higher levels) but you must rush around the platforms and ladders collecting cans of fuel (legs of lamb with the Vulture) and cursing that weird Bubble. Once you have enough fuel then it's Chocks Away!

Oh . . . but don't run out of fuel on the way – otherwise it's . . . SPLASH!



1. Diamonds
2. Sea
3. Platforms
4. Ladders
5. Fuel Gans
6. Rocket
7. Vulture
8. Leg of Lamb
9. Player
10. Bubloid
11. Fuel Gauge
12. Men remaining

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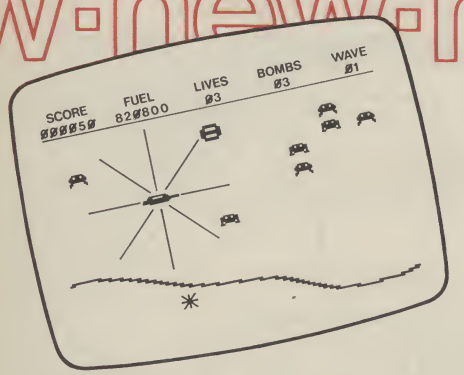

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	TOTAL		

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